THE MEDICAL JOURNAL OF AUSTRALIA

VOL. II.—46TH YEAR SYDNEY, SATURDAY, SEPTEMBER 19, 1959 No. 12

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BRONCHIECTASIS IN CHILDREN: ITS MULTIPLE CLINICAL AND PATHOLOGICAL FEATURES.[1]

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THERE has been considerable controversy concerning the ætiology, pathology and pathogenesis of bronchiectasis ever since Laennec's original description in 1819. The two principal and most widely accepted theories of pathogenesis have been, first, that the disease was due to bronchial damage from infection, the structurally weak bronchi then dilating, and secondly, that the disease was primarily due to pulmonary collapse, the bronchial dilatation initially being due to secondary mechanical factors.

Pathological studies have revealed a wide variety of lesions, from those in which the essential structure of the bronchi was destroyed by infection to those in which the component parts of the bronchial walls were normal. In some cases the affected lobes or segments were collapsed, but not in others. Fibrous occlusion of many of the bronchioles and pulmonary emphysema were also features in some cases.

Clinical studies have also demonstrated a great diversity of features. The mode of onset may vary from an insidious onset with bronchitis in infancy to an acute onset with severe pneumonia or pulmonary collapse. Some patients have no symptoms and live a normal life, others have much cough and sputum and may die early from pulmonary suppuration. Some have chronic sinus infection and wax keratosis, others never show these features.

What is the explanation of this diversity of clinical and pathological features and theories of pathogenesis? Two explanations are possible. First, they may be the protean manifestations of a disease entity which can be caused by a variety of infections. Secondly, they may be due to a number of separate diseases, each with a different pathology and clinical pattern, but all with the one common gross morphological feature of bronchial dilatation. It is not only of academic interest to attempt to establish this point. The better our knowledge of the pathology, pathogenesis and clinical phenomena of

[1] The Swift Memorial Lectures: Lecture II. Delivered at Adelaide on August 28, 1958.

bronchiectasis at all stages, the better will be our prevention and treatment.

In recent years detailed clinical and pathological studies have done much to elucidate this problem. Primary pulmonary tuberculous infection may result in a distinctive pattern of bronchiectasis from bronchial involvement by the caseous glands (Kent, 1942; Jones, Peck and Willis, 1946; Veeneklaas, 1952; and Williams and Anderson, 1953). Similarly, fibrocystic disease of the pancreas results in a characteristic type of lung infection and bronchiectasis, due to widespread suppurating staphylococcal bronchiolitis (Zuelzer and Newton, 1949; Bodian, 1952; Sant'Agnese, 1955). Whitwell (1952) separated three pathological entities—atelectatic, saccular and follicular bronchiectasis—from a large group of surgically resected bronchiectatic lobes, but he was unable to classify all his material. There were also different clinical patterns of illness in these three groups of patients.

For the past 10 years my clinic has been studying the early development of bronchiectatic lesions in an attempt to clarify the pathogenesis, pathology and clinical features. In a series of 650 patients with bronchiectatic lesions, 241 have been studied from the inception of the disease and followed for periods varying from 4 to 10 years. These patients have been classified into a number of groups according to the primary pathological condition. The facts represented are derived from a study of the literature and from these 241 patients.

Bronchiectasis may be classified into the following groups: (i) congenital maldevelopments of the bronchial tree; (ii) primary pulmonary tuberculosis; (iii) fibrocystic disease of the pancreas; (iv) subacute pyogenic pulmonary collapse; (v) chronic non-specific suppurating bronchiolitis and/or interstitial pneumonia; (vi) miscellaneous.

Congenital Maldevelopments of the Bronchial Tree.

Developmental anomalies of the bronchial tree may result in cystic dilatations, which often communicate directly with the bronchial tree (Wolman, 1957). These cysts or bronchial dilatations are lined by a respiratory type of epithelium, and the walls may contain recognizable bronchial elements (cartilage, smooth muscle and elastic tissue), but often the walls are a thin layer of fibrous tissue. Usually these cysts end blindly, but may give rise to small bronchi and bronchioles. While these developmental anomalies may be localized to one segment or lobe, more commonly they involve extensive areas of the lung. The ætiology of these anomalies is unknown.

Such cysts are very prone to become secondarily infected, as they do not possess the normal mechanisms for expelling bronchial secretions.

Clinical Features.

There are often no clinical features referable to these abnormalities until secondary infection occurs, when chronic cough, fever and constitutional symptoms of ill health develop. Wheezing or rattling breathing may occur if secretion narrows the air passages or if defective cartilage in some of the cyst walls leads to bronchial collapse during expiration. The clinical signs are commonly those of widespread rales with either diminished air entry or tubular breathing.

The radiological features are those of air-containing thin-walled cysts, some of which may show fluid levels. Varying degrees of inflammatory reactions are observed in the lung parenchyma around the cysts. Bronchography reveals cysts of varying sizes almost always in communication with the bronchial tree.

Diagnosis.

If these cysts are found in a very young infant, their congenital nature is almost certain. In the older children it is more difficult, for acquired lung disease by destruction of the bronchial walls may result in large cysts, indistinguishable on clinical and radiological evidence from congenital cysts.

Treatment.

Surgical extirpation of the affected lung is the treatment of choice, but often the disease is too widespread to consider this treatment. If surgery is not possible, then postural coughing, physiotherapy and chemotherapy can offer some alleviation of the symptoms.

Primary Pulmonary Tuberculosis.

In approximately 10% of patients with primary pulmonary tuberculous infection, the caseous hilar, bifurcation or paratracheal glands compress, ulcerate and discharge their contents into a bronchus. Collapse from bronchial obstruction, or low-grade tuberculous inflammatory consolidation from aspiration of tubercle bacilli or caseous material into the distal lung segment or lobe often develops. Resolution of the caseous glands and tuberculous lung inflammation is a slow process, and permanent collapse and bronchial dilatation frequently occur. Stenosis of the bronchus may also develop at the site of ulceration of the gland. These lesions affect the right lung more than the left, and the upper and middle lobes more than the lower lobes. Once the tuberculous glandular lesions have healed, the bronchiectatic lesions are healed and dry. Rarely there is residual tuberculous infection, and occasionally they become pyogenically infected.

Clinical Features.

The symptoms during the initial primary tuberculous infection are mainly constitutional with fever, malaise, poor appetite and failure to gain weight. Often a dry cough with wheezy breathing occurs, due to irritation and narrowing of a bronchus from ulceration or compression by the glands. In a few cases these tuberculous lesions develop and heal without causing any symptoms, so that bronchiectasis may develop silently and only be discovered accidentally years later.

The physical signs in the chest are often minimal, and the clinician is often surprised to observe the extent of the radiological changes. There may be no abnormal physical signs or merely those of diminished air entry and impaired percussion note. Dense segmental or lobar shadows of collapse or consolidation can be seen in the plain radiographs. These opacities usually clear slowly, leaving crowded markings often with a "cystic" appearance, which represent collapsed segment or lobe with dilated bronchi. Occasionally the opacities clear rapidly, especially if there is an accompanying virus or pyogenic respiratory infection. Bronchiectatic lesions do not develop in such cases.

Follow-up studies over many years have shown that these bronchiectatic lesions are usually dry and symptomless. Residual tuberculous infection is uncommon and secondary pyogenic infection rarely develops. Hæmoptysis may occasionally occur in adult life.

Treatment.

Treatment of primary tuberculous infection with isonicotinic acid hydrazide (10 to 20 mg. per kilogram of body weight) and with para amino salicylic acid (200 mg. per kilogram of body weight) or streptomycin (40 mg. per kilogram of body weight) promotes resolution of the caseous glands and probably reduces the incidence and sequelæ of the bronchial complications. It is generally wise to continue treatment for at least 9 to 12 months.

Bronchoscopic aspiration of caseous material and removal of granulation tissue play a very limited role in treatment. The majority of patients have low-grade tuberculous inflammation in the lung due to aspirated tubercle bacilli or caseous material, and bronchoscopic aspiration cannot benefit these patients. In a few cases the removal of granulation tissue or a large plug of caseous material may result in re-expansion of a collapsed lobe.

Surgical removal of the glands is indicated if there is complete or almost complete obstruction of either the right or left bronchus, or if there is compression of the trachea.

Once the primary tuberculous infection and glandular and bronchial lesions have healed, the only place for surgical treatment is if there is residual tuberculous infection in the bronchiectatic lesions or if secondary pyogenic infection develops and persists. The results of surgical resection for these complications are very satisfactory.

Fibrocystic Disease of the Pancreas.

Although the pulmonary lesions are the most lethal and dangerous manifestations of fibrocystic disease, they are merely one aspect, for widespread pathological changes occur in all mucus-secreting glands. The pancreas is predominantly affected, with resulting pancreatic achylia, but the salivary glands, gall bladder, biliary ducts and intestinal tract are also commonly affected (Bodian, 1952). The sweat glands are also involved, for they secrete sweat with a high concentration of sodium and chloride.

The basic pulmonary lesion is widespread staphylococcal bronchiolitis affecting the upper and lower lobes with equal severity. It is not known why the infecting organism should be *Staphylococcus aureus*. Obstruction of the peripheral bronchial tree by plugging with thick tenacious mucus or mucopus causes widespread pulmonary emphysema and areas of lobular collapse. Lobar collapse occurs in approximately 10% of cases and usually affects the right lung. Destructive inflammatory changes in the bronchioles and smaller bronchi commonly result in widespread bronchiectasis. Interstitial pneumonia is common.

Clinical Features.

The main clinical features of this disease are referable to the alimentary tract, pancreatic achylia and the lung infection. The disease usually commences in infancy with the passage of bulky pale foul-smelling stools, in which oily droplets may be observed. Despite a good appetite, these infants fail to grow normally. Staphylococcal bronchiolitis supervenes sooner or later, and its onset is often declared by a persistent irritating cough. Later respiratory difficulty often develops due to emphysema, and bronchopneumonia frequently occurs and is a very serious complication in these young babies.

The lung infection is often resistant to treatment for two reasons; first, frequent development of drug resistance by the *Staphylococcus*, and secondly, inability of young babies to clear the tenacious mucopus from the bronchial tree. If these infants can be helped into childhood, the lung infection seems to be less severe and more readily controlled by treatment. Some of these children are able to attend school, enjoy reasonable health and reach the second and even third decade of life. It may be that a small number of adult patients with bronchiectasis are suffering from fibrocystic disease. An adult of 44 years of age was recently investigated at the Royal Children's Hospital, Melbourne, for chronic cough and greasy loose stools which he had had since childhood. He was found to have gross steatorrhœa, pancreatic achylia and widespread suppurating brochiectasis.

Treatment.

Growth is promoted by better absorption of fat and protein from a well-balanced high protein diet, given with a reliable pancreatic extract. Appropriate chemotherapy for the staphylococcal respiratory infection requires adequate bacteriological control, owing to the frequent development of drug-resistant strains. It is very important to continue chemotherapy until the lung infection has cleared. In the very young infant, or in the child with persistent even though mild infection, it is advisable to continue drug therapy indefinitely. It is quite safe to give continuous therapy with the broad-spectrum antibiotics provided the dose is reduced to approximately half the full therapeutic amount. These children should not be treated in hospital for longer than is absolutely necessary, owing to the risk of contracting drug-resistant strains of *Staphylococcus*.

When these children are able to cooperate with breathing exercises and postural coughing to clear their bronchial tree of secretions, they improve considerably. Inability to clear the bronchial tree of mucopus is the main reason for the poorer outlook in infants and toddlers. During periods of bronchial and bronchiolar obstruction, inhalation of aqueous mists with or without antispasmodics seems to assist some patients.

Subacute Pyogenic Pulmonary Collapse.

The common association of bronchiectasis and collapse both clinically and pathologically in humans and experimentally in animals led to the assumption that pulmonary collapse was the major factor causing bronchiectasis. Warner and Graham (1933), Anspach (1934), Lander and Davidson (1938), Fleischner (1940), Brennerman (1943), Lander (1946) and Coope (1948) have all expressed this view.

Segmental or lobar collapse frequently occurs during the course of acute respiratory tract infections, whether the infection is of bacterial or viral ætiology. The collapsed lobe usually expands spontaneously as the infection resolves, but in a small number collapse persists. For clinical purposes the collapse is considered to be subacute if it has been present for four to six weeks, and chronic or permanent if present for over one year. In almost all cases of subacute collapse pyogenic infection is present. There are a number of reasons why acute collapse drifts into a subacute stage. Untreated pyogenic infection, poor general health or debility, ineffective cough reflex due to muscle weakness or a very young age, and bronchial obstruction may all be important factors. Bronchial dilatation is almost invariably present in these pyogenically infected collapsed lobes. In over 50% one of the common pathogenic organisms, either *Staph. aureus*, beta-hæmolytic streptococcus, *Streptococcus pneumoniæ*, or *Hæmophilus influenzæ* can be cultured.

Permanent collapse and bronchiectasis will occur in many patients if the infection persists. Early resolution of the infection, either with or without the aid of treatment, usually results in reexpansion of the lobe and disappearance of the bronchiectasis, a state of affairs referred to as reversible bronchiectasis (Findlay, 1935; Jennings, 1937; Lee Lander, 1946; and Field, 1949). All grades of partial collapse and bronchiectasis may be observed between these extremes of permanent and reversible bronchiectasis.

Clinical Features.

The illness, which may affect a child of any age, usually commences with a clearly-defined episode of acute respiratory infection, pertussis or morbilli, or occasionally after the inhalation of a foreign body or after an operation. The two outstanding features are persistent cough and constitutional symptoms of ill health. There are usually no characteristic features about the cough, which the parents often describe as being "chesty" or "loose". The constitutional symptoms are those common to any low-grade infection, namely, pallor, languor, irritability, refusal to eat and failure to gain weight. Some patients have an intermittent or continuous low-grade fever.

The physical signs are both constitutional and local. The children do not look well, are often pale and underweight, and their muscle tone and posture are poor. The chest signs are localized over the collapsed lobe or lobes, and usually consist of impaired percussion note, diminished air entry and crepitations. Tubular breathing and signs of mediastinal displacement are sometimes present. Postural coughing over the examiner's knee will almost always result in expectoration of blobs of mucopus. This is a very valuable sign, as it clearly demonstrates the presence of infection and suppuration.

Bronchoscopic examination demonstrates mucopus in the affected lobar or segmental bronchus, but the lumen is rarely occluded by a mucous plug or mucosal swelling or other obstruction. The cause of collapse in the majority of these patients is obstruction of the multiple

smaller bronchi and bronchioles by inflammatory exudate. Bronchography shows dilatation and crowding of the medium-sized bronchi, but the smaller bronchi and bronchioles fail to fill.

Treatment.

Treatment is directed towards obtaining resolution of the infection and reexpansion of the collapsed lobe. In the initial stages, while there is evidence of active infection, these children should be confined to bed and given chemotherapy. As a pathogenic organism can be isolated in over 50% of cases, chemotherapy should be guided by appropriate bacteriological control. In those cases in which a pathogenic organism cannot be cultured, one of the tetracycline group of drugs seems efficacious. Chemotherapy should be continued until infection has resolved, and this may take a number of weeks or months. It is quite safe to administer the broad-spectrum antibiotics in reduced doses over periods of weeks or months, e.g., tetracycline, 20 mg. per kilogram of body weight. The guiding rules of resolution are the absence of cough, sputum and signs in the chest. A normal temperature for a week or more does not mean that infection has cleared.

Reexpansion of the collapsed lobe is best achieved by appropriate physiotherapy and postural coughing to remove mucopus from the bronchial tree. In the active stage of the disease physiotherapy should be carried out at least twice daily, and postural coughing every few hours or as often as necessary to clear the bronchial tree of mucopus. With children under the age of three years it is very difficult and usually impossible to gain their cooperation in physiotherapy and postural coughing.

The course of the disease varies considerably with treatment. Early diagnosis, adequate chemotherapy and prompt restoration of lung function will result in complete resolution with reexpansion of the collapse and disappearance of the bronchial dilatation in many cases. By contrast, late diagnosis, inadequate chemotherapy and ineffective restoration of lung function result in permanent collapse and bronchiectasis in many cases. Every intermediate stage may be seen between these extremes.

Chronic Non-Specific Suppurating Bronchiolitis and/or Interstitial Pneumonia.

Many workers, among whom are McNeil, Macgregor and Alexander (1929), Robinson (1933), Ogilvie (1941), Churchill (1949) and Whitwell (1952), have shown that destructive mural bronchitis and bronchiolitis and interstitial pneumonia cause bronchiectasis, and that pulmonary collapse is not an essential pathological feature as in the previous group of patients.

Bronchitis and bronchiolitis associated with upper respiratory tract infection is a common illness in infants and young children. Spontaneous resolution usually occurs, but in a small number the infection persists, suppuration occurs and the condition becomes chronic. Intercurrent respiratory infections aggravate the condition. Destructive inflammatory changes in the bronchi and bronchioles give rise to bronchiectatic lesions, the extent and severity of which may vary from patchy to widespread general lesions. In some patients new bronchiectatic lesions progressively develop. In a smaller number of patients the respiratory infection develops more acutely and may follow bronchopneumonia, morbilli or pertussis.

The reason why these children develop this type of chronic bronchial and bronchiolar infection is not fully understood, but a number of aetiological factors are known. It is significant that the majority of patients develop the disease during infancy, and rarely after the age of three years. An ineffective cough reflex, due to general debility or to a very young age, means that secretions are retained in the bronchial tree, thus leading to persistence of infection. In some patients there seems to be an inherited tendency to chronic respiratory tract infection. In a series of 57 patients with this type of infection, 14% of the siblings, parents or immediate relatives had proven bronchiectasis of a similar pattern, and 38% had chronic sinusitis, bronchitis or probable bronchiectasis. No specific pathogenic organism seems responsible for the infection, as it is uncommon to culture a specific organism in the early stages of the disease. Later, when the disease is well developed and bronchiectatic changes are present, pathogenic bacteria, especially *H. influenzæ*, can often be cultured.

Clinical Features.

The disease commences insidiously with "bronchitis" in many patients, but the onset may be more acute with bronchopneumonia, morbilli or pertussis. The clinical features are characterized by persistent cough and nasal discharge, and constitutional symptoms of ill health and attacks of fever. Often the breathing may be rattling or wheezy. These symptoms persist through childhood, but often there is considerable amelioration at the time of or before puberty. Approximately two-thirds of these patients develop wax keratosis.

The physical signs in the early stages are those of bronchitis and bronchiolitis, crepitations and râles being heard extensively over the chest, but especially over the lower lobes, lingula and right middle lobe.

Radiologically, prominence of the bronchovascular pattern is seen in cases in which illness develops with bronchitis and bronchiolitis, but in those which develop a more acute infection, mottling, haziness and pulmonary collapse may be seen. As bronchiectatic lesions develop, the radiological changes are usually situated in the dependent parts of the lung, namely, the lower lobes, right middle lobe and lingula. It seems that gravity plays a definite part in determining their distribution. In contrast to the group of patients with subacute pyogenic collapse, collapse is an inconstant feature in this disease. However, it may develop in some cases, and similar bronchiectatic changes occur in the collapsed lobe.

Treatment.

Application of the general principles of treatment of chronic lung infection to this group of patients is beset with difficulties. In the early stages chemotherapy is not very effective, as no specific type of infection can be demonstrated in the majority. Empirical treatment with one of the tetracyclines in a dose of 15 to 20 mg. per kilogram of body weight often seems to benefit some patients. It is usually necessary to continue chemotherapy for periods of months or even longer. Short courses of treatment over five to seven days with full dosage of the broad-spectrum antibiotics does not seem to be as efficacious as the longer treatment.

Restoration of lung function is extremely difficult, as most patients are too young to cooperate with physiotherapy or postural coughing. It is quite striking the improvement which follows when they are old enough to collaborate with these measures, and in this respect they are very similar to infants with fibrocystic disease of the pancreas.

Surgical treatment of bronchiectatic lesions in this group is of very limited value. Many of the poor results in the surgical treatment of bronchiectasis of this type in children are probably due to failure to recognize that the essential pathological condition is one of a general respiratory tract infection with some parts of the lung being more affected than others. A bronchogram may be normal even when well-established chronic bronchiolitis is present. However, in a few cases, one segment or lobe may be so severely affected that it is a mere reservoir of pus, and in these surgical resection will bring some benefit. However, before surgery is undertaken it is essential to be sure that the infection in other areas of the lung is stationary, and that the child is of an age when he can and will cooperate with physiotherapy and postural coughing. Failure to appreciate these problems can result in further progression of the disease in other areas of the lung.

Miscellaneous Group.

Any destructive inflammatory lung lesion may result in bronchiectatic changes. Suppurating pneumonia, especially staphylococcal pneumonia, and lung abscess

are two examples. Pulmonary hydatid disease with complicating secondary pyogenic infection may also leave residual bronchiectatic lesions. Some of these lesions, once the original infection has subsided, will remain dry and symptomless. Others will have residual pyogenic infection with cough and sputum and varying degrees of constitutional upset.

Treatment will depend on individual circumstances. If pyogenic infection is persistently present, then surgical resection should be undertaken whenever possible. If the lesion is dry, no treatment is required.

Diagnosis.

The clinical patterns of these diseases are fairly distinctive, and with the help of skiagrams of the chest and routine laboratory tests, an early diagnosis can be readily established. As presistent cough is the most outstanding clinical feature, any child with this symptom should be adequately investigated. If the cough develops insidiously in infancy, and is associated with a discharging nose and with repeated attacks of fever, a diagnosis of chronic non-specific bronchiolitis is suggested. A similar cough, in an infant without a discharging nose, but who has a large appetite and bulky or foul-smelling stools, suggests fibrocystic disease of the pancreas. Confirmation of this latter diagnosis will be sought in microscopic examination of the stool for fat droplets, in culture of a cough swab for *Staph. aureus*, and in the sweat test. As both of these disorders are characterized by bronchiolitis and bronchitis, the physical signs in the chest may be similar, namely, scattered crepitations, poor air entry, wheezy or rattling breathing and often emphysema. Owing to the sticky viscid bronchial mucus, emphysema is an almost constant feature of fibrocystic disease of the pancreas. In the early stages there are often no abnormal changes radiologically, and to the inexperienced this may be confusing. The later development of interstitial inflammation and areas of collapse or consolidation will give definite radiological signs. In fibrocystic disease these will usually be widely distributed in the lungs, but in chronic non-specific bronchiolitis with bronchiectasis they will be in the lower lobes, lingula and right middle lobe.

The child with subacute pyogenic collapse almost always gives a history of an initiating acute respiratory infection, after which he has a persistent cough and symptoms of ill health. Clinical examination usually reveals localized signs, and these are often minimal, consisting of impairment of the percussion note, diminshed air entry and a few crepitations. Radiological examination will disclose one or more collapsed lobes.

Congenital maldevelopments of the bronchial tree with secondary infection will be suspected by the radiological appearance of air cysts of varying size. If symptoms have been present for some years, it may be impossible to determine whether the cysts are due to acquired disease or to congenital bronchial maldevelopment.

Recurrent bronchitis, because cough is the predominant symptom, is often confused with these diseases which give rise to bronchiectasis. The common causes of recurrent bronchitis are allergic bronchitis, bronchitis associated with upper respiratory tract infection, and bronchitis due to repeated respiratory infections. All of these conditions are particularly prevalent in young children. In allergic bronchitis there is often a family history of allergy, and the child himself may have had eczema as a baby. The condition should always be suspected if the child is the only member of the family who repeatedly gets a "cold" or running nose, or if the cough is troublesome at night. Respiratory tract infection, weather changes and emotional tension may precipitate these attacks. The child with repeated respiratory tract infections and/or sinus infection is usually worse during the autumn and winter months, but with the warmer settled weather of summer, clearing of the bronchitis and sinus infection occurs. The most important differentiating point clinically between bronchitis and the other groups of bronchiectasis is the recurrent nature of the symptoms, with intervening periods of normal health.

Treatment.

There are a number of underlying principles in the medical treatment of these diseases. The first is early diagnosis and treatment to prevent the development of destructive inflammatory changes in the bronchi, which give rise to the bronchiectatic lesions. Early diagnosis will be achieved when each family doctor and pædiatrician understands the ætiology, pathology, pathogenesis and clinical features of these diseases.

The second principle is appropriate chemotherapy and bed rest to aid resolution of the infection. Bed rest is particularly important when the infection is active, even though the child may be afebrile. Effective chemotherapy in most cases requires collaboration with the bacteriologist. This is especially important in a case of fibrocystic disease of the pancreas, as the *Staphylococcus* often develops drug resistance. Chemotherapy, to be effective in subacute and chronic lung infections, should be continued until infection is either healed or in a stationary state. The effectiveness of prolonged chemotherapy in fibrocystic disease is beyond doubt, and other chest lesions are also benefited. Prolonged chemotherapy with the broad-spectrum antibiotics is relatively safe, provided full therapeutic doses are not used for longer periods than treatment of the initial acute infection demands. Maintenance doses of the order of half or even less of the maximum therapeutic dose are effective and cause few toxic manifestations or unpleasant side effects, even though continued for weeks or even months.

The third principle is restoration of lung function and the clearing of secretions from the bronchial tree. These measures, if effectively carried out, reduce the infection and also prevent pulmonary collapse. There are several problems in the application of this treatment to children. In many of them the lesions commence in infancy, and it is very difficult to get a child of even three years to cough and spit out phlegm. Older children readily cooperate with a physiotherapist, nurse or parent initially, but after some months the routine of physiotherapy morning and night becomes tedious. If physiotherapy can be carried out through the medium of games or group activity the problem is solved. Postural coughing for periods of several minutes two or three times daily to clear the bronchial tree will usually be carried out provided the child and the parent understand its purpose.

Surgical treatment of bronchiectasis should be limited to those lesions which are causing symptoms. There is no need to remove dry bronchiectatic lesions as an insurance against possible future infections. Before surgery is undertaken every patient should be considered from several aspects. First the disease should be localized and the remainder of the lung should be normal, or if it has been previously infected then the lesions should be stable. The greatest care must be exercised before the decision is made to remove a bronchiectatic area when this lesion has developed as part of a non-specific bronchiolitis and/or interstitial pneumonia. Secondly, the patient should be of an age and temperament able and willing to cooperate with physiotherapy after operation. Post-operative infection and collapse can be a major problem in a non-cooperative child.

Conclusion.

Recent work clearly indicates that a variety of separate diseases can give rise to bronchiectasis. Recognition of these diseases in the early phases, and effective treatment of them, will do much to prevent or minimize the development of bronchiectatic lesions. Bronchiectasis should no longer be regarded as a disease, but the end process of a number of disease entities.

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By MAIE CASEY,
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IN giving some account of my father, I am dividing it into four sections: (i) his background, parentage and education; (ii) his experience and career; (iii) something of the medical scene of his day—his contemporaries; (iv) himself as a man, outside his profession.

My capacity to write this article—and I cannot, of course, do it in any professional way—is helped by the fact that, in the days when my father practised in Collins Street, he lived over his consulting rooms, as did most other doctors in Melbourne. Therefore children of physicians and surgeons lived in an atmosphere of medicine, surrounded by the books and tools of the trade. Their main friends were doctors or the children of doctors. I was to a great extent brought up by my parents' friends, by three distinguished men in particular, R. Hamilton Russell, R. R. (Dick) Stawell and Felix Meyer, then all bachelors. They worked on the theory that the last people who ought to have children were parents, and took a good deal of trouble over me.

[1] Read at a meeting of the Section of History of Medicine of the Victorian Branch of the B.M.A. on December 8, 1958.

Charles Snodgrass Ryan (the Snodgrass came through Peter Snodgrass, of early Melbourne fame, who married Charles's mother's sister) was born at Killeen, Longwood, Victoria, on September 20, 1853, the son of an Irish Overlander from New South Wales who founded the stock and station firm of Ryan and Hammond. His mother was the eldest daughter of John Cotton, who came to Australia from Devonshire in 1843 with his wife and family of nine children, to which he added. He established the property of Dougallook in the upper Goulburn Valley. John Cotton was, amongst other things, an ornithologist and artist of distinction, and published in England several illustrated books on birds, one of which has become a coveted collector's piece. He was anxious to make a similar record of Australian birds, but did not have time before his early death in 1849. I mention all this because many of John Cotton's descendants have inherited his gift, notably a granddaughter, Ellis Rowan, the flower painter. His taste for ornithology was strong in my father.

Charles Ryan was educated at the Church of England Grammar School and at the University of Melbourne, where he studied medicine in 1870-1872. He then went by sailing ship to Edinburgh, and graduated as bachelor of medicine and master of surgery in 1875. He followed this up by studying under Professor Busch at Bonn, and did further post-graduate work in Vienna.

While in Rome, and pretty well broke, my father came across an advertisement by the Turkish Government in the London *Times*, inviting applications for 20 military surgeons. This was an opportunity for experience which he could not resist. He pawned the gold watch of a friend, who was heavily in his debt, which enabled him to travel to London and sign up at the Turkish Embassy at the salary of £200 a year, paid monthly in gold.

The complicated politics of the Balkan States, which were seeking independence from domination by Russia, Turkey and Austria, had involved Russia in supporting Serbia in a war with Turkey. It was in this waning campaign that my father arrived in Nish and had his first experience of war casualties. His real work began in April, 1877, when Russia, aided by Rumania, declared war on the Ottoman Empire. This became a full-scale effort, and the experience of Charles Ryan as one of the few surgeons through the sieges of Plevna and afterwards at Erzeroum was an unusual one for a young Australian.

The defenders of Plevna, who twice defeated Russian attacks upon it, made one of the proud stories in Turkish history. My father's book "Under the Red Crescent", which deals with this campaign, is still read in Turkey.

At this range in time, to read of the medical resources in Plevna fills one with the same kind of horror as the medical story of the Crimean War. There were few anæsthetics, not enough doctors, not enough hospitals, not enough supplies. It was remarkable that so many men survived their wounds. My father believed that this was to an extent due to the abstemious life of the Muslim Turk, who did not drink or smoke, who was inured to hardship and cold and who was basically stoic. Before the fall of Plevna, my father was sent away in charge of many hundreds of wounded to Sofia (Bulgaria), and the story of the journey of the injured, in 300 unsprung arabas, drawn by small oxen, is ghastly.

After leaving Plevna, my father was sent by the English Stafford House Committee to Erzeroum, where he was in charge of a hospital of 400 beds. The story of Erzeroum is more tragic even than that of Plevna. Typhus and typhoid broke out, consuming hundreds of men daily, while others were mutilated by frost bite. The cold was so blistering that the dead could not be laid by the weakened survivors in the icy ground, but were wrapped in clean white sheets according to Muslim custom and left out for the dogs to devour. Amongst those stricken by typhus were the English doctors; my father was one of the few survivors.

During the 17 months he spent as a surgeon with the Turks, many letters relating to my father appeared in the London *Times* and in the Irish and Australian newspapers. He had been closely associated with that great soldier, Osman Pasha, who recommended him for the

Turkish orders of the Osmanieh and the Medjidie. He was described either as an Englishman or as an Irishman. I suppose no one in those days knew what an Australian was—the word would have been considered as a misprint for Austrian.

Charles Ryan returned to Australia in June, 1878, to practise in Melbourne. Owing to the publicity of Plevna, and the nickname he quickly acquired, he had the usual row to hoe of the Australian who has been away from his country. George Syme, who was to become his friend (they did each other's work when one of them was away), tells us that he was present at my father's first operation at the Melbourne Hospital. The operating theatre was crowded to see the surgeon of Plevna at work. He was rather taken aback and nervous, but came in jauntily whistling a popular air. He established a reputation for forming quick and shrewd judgements and for rapid and sound operative methods. These qualities were no doubt developed during the stress of the Turkish campaign, where he learned the quick handling of wounds. His character also had been shaped by this experience, which had given him a high sense of duty and an intolerance of deviousness or shirking.

During the years 1879 to 1913 he was on the honorary medical staff of the Melbourne Hospital, and then became consulting surgeon.

At the Children's Hospital, Carlton, he was honorary medical officer from 1883 until 1913, and consulting surgeon thereafter.

He was appointed Chief Medical Officer to the Victorian Railways in 1903, a position he held until 1924. In this job he became particularly adept at detecting "lead-swinging" amongst those making claims for injuries.

Charles Ryan's appointment as Consul-General for Turkey kept strong his link with the Turks, for whom he felt affection and respect. I can remember him comparing the temperament of Ned Kelly, whom he looked after when he was wounded at Glenrowan in 1880, with that of the patient stoic Turk.

During the years between his return to Australia as a young man and his departure to the Middle East in 1914, my father was occupied with the two big hospitals, where his influence with students was widespread. Amongst the many of whom he was proud, and for whom he felt affection were Thomas Dunhill, Charles Kellaway and Mark Gardner.

He took an active part in the Victorian Branch of the British Medical Association, and became president of the Medical Society of Victoria in 1893 and was one of its trustees for a long time. Beyond this he had an extensive private practice.

As Principal Medical Officer to the Victorian Military Forces, at the outbreak of the first World War, Charles Ryan, aged 60, left Australia for Egypt as Assistant Director of Medical Services of the First Division, but before the landing on Gallipoli was appointed to General Birdwood's staff. Here he was, then, facing his ancient friends of 37 years, still wearing his Turkish decorations. In an armistice to bury the dead (shades of Erzeroum!) his Plevna medal, amongst the most revered of Turkish ribbons, was recognized at once by the Turks, and he and the Turkish officer in charge embraced with tears. "I was a Turk then", said my father.

In the epic campaign on Gallipoli, the first time Australians had fought together as a body, many were killed and wounded and many fell ill. At the end of 1915, Charles Ryan developed enteric fever and was invalided to London. Two days after his arrival he was obliged to grapple with a burglar, which seemed to help his recovery.

For the rest of the war he worked as consulting surgeon to the Australian Forces at our London headquarters in Horseferry Road, where his ability to reveal "lead-swingers" at medical boards cannot have endeared him to those who were planning to return to Australia and not to the front.

By this time, in addition to his Turkish decorations, Charles Ryan had been made a Commander of the Bath, a Companion of the Most Distinguished Order of St. Michael and St. George and, in 1919, a Knight Commander of the Most Excellent Order of the British Empire.

He died on October 23, 1926, in the R.M.S. *Otranto*, returning to Australia from London. After a funeral service in St. Paul's Cathedral, he was buried in the Melbourne General Cemetery.

The medical scene of my father's day was very different from the present one. Scientific knowledge—knowledge of the human body, of surgical equipment and technique, of drugs—had not yet made its tremendous forward strides.

In the thirty or so years of my father's practice there were many fewer persons in what is now the vast extended city of Melbourne, fewer hospitals and facilities, less preventive medicine, though not necessarily fewer doctors in proportion to patients. The general practitioner, often both physician and surgeon, had a go at anything that came his way. He developed wide experience of human beings, as he did of disease and injury. Though there was, even then, some degree of specialization, the doctor still had the opportunity to study his patient as a man rather than as the harbourer of an interesting localized condition.

Transport was also very different in those days. It was so slow that it must have been a hazard in acute cases. Doctors saw patients by means of horse-drawn buggies, cable trams, and trains, which brought both together in hospitals, consulting rooms or in the houses of the sick. The slowness of traffic, however, gave doctors time to reflect—to detach themselves a little from the tensions of their work, even if they did so uncomfortably, in joggling and dust-surrounded vehicles. Charles Ryan, through the initiative of his wife, had one of the first motor-cars in Melbourne in 1902—a six horse-power De Dion Bouton. I can remember my mother saying: "Now, Charlie, if I let you have a car, you must promise me to drive it only in low gear!" She need not, for more reasons than one, have made this stipulation. My father was frankly terrified of it, and it really added very little to his contact with his patients. Driven by my mother, and less well by our reluctant coachman, James, it was always stopping and becoming encircled by passers-by. My father would get out of it and hurry away, whistling, trying to pretend he had no connexion with it. Although he was a man of great physical courage, nothing would induce him to learn to drive it. He said it might affect the steadiness of his surgeon's hands.

Amongst my father's close friends were, as I have said, Dick Stawell and Hamilton Russell. One was a physician, the other a surgeon. Between the years 1899 and 1907 they lived together in Collins Street. When they gave a party, which they did with much excitement and enthusiasm, they ran backwards and forwards to our house to borrow plates and glasses and knives and forks from my mother. I first consciously looked at Dick Stawell one day while he was crossing the cable tram lines between the Melbourne Club and our house opposite. He was wearing a tail-coat suit, a high stand-up collar and rimless glasses held on to his head by gold wire. Wispy hair stood out like a halo round his eager, finely drawn face, which looked small for his long elegant body. I remember thinking how oddly he was dressed. But they all were. Lively and stimulating, Dick Stawell could be extremely funny in his rather high-pitched, precise voice. He would abandon himself whole-heartedly to wild gusts of laughter when he was amused.

Some measure of his dedicated approach to his patients, many of whom were children, may be judged by the picture of myself, aged about ten, trying to mend the inside of a gramophone whilst he, with delicate fingers, held my ringlets out of the way of the operation during the long time it lasted. Both he and Hamilton Russell were primarily interested in the study of human beings; they brought, not the text-book attitude of mind to their patients, but original and individual study. Hamilton Russell was a quieter, more dreamy man, without his friend's wild chuckle. He had a noble head, a smooth pink face of extraordinary, almost incandescent beauty, silky greying hair and a tall handsome figure. He was very musical and played the piano well.

From time to time these two men would take me to concerts and an occasional opera, where they would sit, one on either side of me, and explain the finer points of the music. It was agony. I was too conscious of their anxious kindness to enjoy myself. For many years as I grew up Hamilton Russell would come to see me if I had been away, would look at me with affection, talk a little, and then, invariably, go to sleep.

Felix Meyer, who lived a few doors away to our west, was quite a different character, with a slightly exotic foreign flavour. Short, dark-bearded, with full luminous blue eyes, he was a witty and cultured man, with wide interests outside his profession. He was a woman's doctor. It surprised me that he and my father, who both had the romantic conception of woman, should be champions of women in the field of medicine at a time when few men were. There had been a good deal of discussion at the University of Melbourne before women were admitted to the School of Medicine. But Professor Orme Masson, Professor of Chemistry, opened a vital meeting with these words: "Gentlemen, the ladies have come to stay!" For a time, however, there was a degree of segregation, and women did dissection in a room set apart for them, alone.

Amongst the earliest women to take degrees in medicine and surgery was Helen Sexton, who graduated in 1892 at the age of 31. She became the first woman surgeon on the medical staff of the Women's Hospital, and consulting surgeon at the Queen Victoria Hospital, which was then in Mint Place. She had a brusque manner, a rather gruff voice and a smile of extraordinary sweetness. My father thought the world of her, as a human being and as a surgeon.

Another associate of his, whom I often saw, was Sister Madge Kelly, who with her sister Ellen ran a private hospital at the corner of Spring Street and Flinders Street (the building with the little peaked tower). Sister Madge was a big woman in every way. She had a warmth and vitality that must have given strength and confidence to all who came within her radiance.

Of my father in his professional field I knew little. He used sometimes to take me round the Melbourne Hospital and the Children's Hospital during his afternoon visits. I hated going. I hated, as do most young animals, to see sickness and injury. It seemed to me that persons in bed, adults and children alike, were happy to see my father, who had a strong, cheerful personality and his own way of addressing those of the female sex, which made them laugh. He invented the most extravagant names for them; Araminta was one of his favourites. His success as a surgeon seemed to be due to a gift for diagnosis and to the fact that he operated rapidly; this, before technical advances had made it less important, gave the patient greater chances of recovery. He had a high rate of recovery to his credit. Those were the days when appendicitis had been discovered as a common hazard. It was much publicized.

One operation caught my young fancy. Though my father rarely talked "shop" in his home, this operation permeated our lives because my father was excited by it. A man had come to the hospital, almost completely scalped. My father took the pelt of a young goat and sewed it over the head. He had high hopes; but alas, after a while, the first disappointment took place. The hair fell out. Then, of course, inevitably the whole graft must have come away. I did not hear the end of the story, but I am now aware that it was medically established, only twenty or so years ago, that successful grafts can be made only from the injured body itself or at furthest from the flesh of an identical twin.

What did Charles Ryan look like? He was a short, compact man, thick rather than fat, with a massive head trimmed with very little curly blond hair around his ears and the back of his neck. Brilliant eyes of a startling turquoise blue dominated his handsome ruddy face. His hands were plump, with fingers that narrowed and turned up towards the tips. He dressed neatly and took some interest in his feet, which were small and well shaped. They were usually encased in laced-up boots, not only because boots were then fashionable, but because a hangover from typhus in Erzeroum had left him with phlebitis in one leg.

He married Alice Elfrida, second daughter of the Honorable Theoditus John Sumner, in 1883, and lived for a few years in Dr. James's house at the corner of Collins Street and Spring Street (now Alcaston House). Here my brother Rupert was born, and here my mother nearly died of typhoid fever contracted through the primitive drains of the property. They afterwards moved to 37 Collins Street, where I was born.

This house was one of a pair; but whereas number 35, inhabited by Fred. Dougan Bird and his family, had two blind sides, ours had bow windows in its west face. This permitted us to look into the fascinating domain of Dr. L. L. Smith. His elegant pillared house was set back from the street in a garden adorned by fountains, statues and a gateway into Collins Street, with a cast-iron arch over it and two side pillars holding lanterns. From the deep windows of this most desirable house would come sounds of music to delight me. I was able to get glimpses of Dr. Smith's romantic-looking children and of himself, a dapper little bearded man who wore a diamond ring. Though he and Charles Ryan were by no means close friends, one of the letters that gave my father particular pleasure was a sensitive one of congratulation from Dr. L. L. Smith when my brother Rupert passed out of Woolwich Military Academy in 1904, breaking all previous records.

There can have been no other consulting room like my father's in Melbourne. It was entered through our dining room, where a screen concealed patients from the sight of us eating, because hours for consultation were between twelve and two. The surgery, as it was usually called, was lined with blackwood book-cases filled with medical books. On the tops of these cases sat countless stuffed birds, some in glass domes, some not, witnesses to my father's passion for ornithology. Most of the birds he had stuffed himself. The birds' eggs in a corner cupboard he had collected in the bush, sparingly, with careful attention to the rarity of the species and to the feelings of the parent birds. He was certainly better as a surgeon than he was at stuffing birds. Formless, they sat awkward and depressed upon their perches. Though all these beady-eyed creatures must have surprised his patients, they may have brought them some comfort and diverted their minds a little from their pains and fears. This same bird-ridden room often became transformed in the evenings. Its high, glossy couch held trays of food and drink instead of anxious patients; its atmosphere was clouded with smoke, while sessions with colleagues were held which were named "yarning". This meant talking in a relaxed atmosphere about almost everything in the world.

The rest of our property contained many more birds, and animals—these were alive. In the stables we had horses, Borzoi and other exotic kinds of dogs; in the yard waddled a tyrant cockatoo. Upstairs on the veranda of my nursery a huge cage held Queensland finches, a smaller cage, temporary visitors like flying mice or lizards. Our domestic pets were Australian terriers and Siamese cats.

Charles Ryan had two special interests, more popular, possibly, outside than inside the family. One was photography, mainly coloured photography, which required women to sit for him for ages in multicoloured garments. On Gallipoli he managed to take a series of interesting stereoscopic records at a time when photography was not only difficult but forbidden. His other pleasure was in being a *raconteur*. In this art he had a close and vigorous rival in Alick Finch Noyes, a charming skin specialist who lived across the street from us.

In the period I have covered—our life in Collins Street up to my fourteenth year—I did not see much of my father. On Sundays he would take me sometimes to

call on friends. I can remember his cheroot, newly lit, scenting many a sunny afternoon. In the evenings when he and my mother were dining out, I would help him to dress. He would give me sixpence for my attendance, but I did not need it; his light baritone voice singing for me Thomas Moore's Irish melodies and sometimes "The Place Where the Old Horse Died" was pleasure enough.

My father was too physically lively to be a man of profound contemplation; he was more interested in facts than in abstract ideas, more interested in practice than in theory. As far as we were concerned in the family, he was gay and cheerful—quick-tempered sometimes, but it was all over in a flash and gone for ever. He had most of the qualities that are pleasant to live with.

Though in the days of the Russo-Turkish campaign he had found enjoyment and relief in wine when he could get it, he was, from principle, an abstemious man. When he and my mother were tired they would share a pint bottle of French champagne. We had on the sideboard a fiendish contraption named a tantalus, in which cut-glass bottles of spirit were locked. No one ever seemed to know where the key was, when some was needed.

Outside the family, Charles Ryan was hard-working and conscientious, with a great love of people. When he was occasionally chided for his gullibility, he would reply: "It is better to believe in human beings than not to believe in them. This way you make less mistakes." Fantastically generous with his possessions as well as in his mental attitude, by nature he was instinctive, robust and adventurous. I used to think sometimes that he drew the long bow when recounting incidents that had happened to him. But when I travelled with him, as I did later in life, I found that strange and exciting things did in fact happen to him—to us both.

In finishing this account of my father, I will quote from an article that Hamilton Russell wrote for THE MEDICAL JOURNAL OF AUSTRALIA on November 27, 1926:

> Those of us who were for a long time in intimate association with him in his work would soon come to recognize the presence of a native ability and forcefulness which would often carry him nearer towards the goal of efficiency that another with more showy intellectual qualities would fail to reach. In character he was unique; I have never known a man quite like him and I had good opportunities for observing him in days gone by when I was closely associated with him in both hospital and private work. Never was a nature more sunny and never was the borderland more narrow betwixt laughter and tears. One was always either laughing with him or smiling at him, but whatever the jest might be, it was never one that had been better left unspoken. One should speak first of his chivalry towards women and towards the weak, of his almost childlike simplicity and good nature, and of even more significance, his intolerance of whatever conveyed the least suggestion of deviousness of unfairness. He would travel by no road that was not rigidly straight.
>
> There was no doubt that Charles Ryan was a very brave man . . . . In the Turkish Army of 1877 he is said to have attracted no small amount of notice by reason of personal valour, and even in civil life is there not a story of a maniac who started revolver practice in a theatre and of the promptitude and reckless courage of Ryan who leapt over the seats in order to come to grips with an armed madman? Even his little peculiarities were such as to make him the more lovable. His curious habit of making presents of all sorts of things of personal or domestic value would be embarrassing at first; later, one discovered the correct method of dealing with the situation, which was to pretend to accept the gift with due acknowledgements and no fuss, after which the episode might be regarded as closed and presumably forgotten by both parties.
>
> He dearly loved "society" and was greatly sought after, for no matter what the gathering might be, his presence would go far towards making it cheerful and happy. Was there anyone else who could be at once so naïvely self-confident, so easy and charming in his manners and so amusing? He had a genius for friendship and his friends were cosmopolitan.

BACK INJURIES.

By L. W. WING,
Medical Officer, Electricity Commission of New South Wales, Sydney.

To anyone with the task of examining all disabled workers in a large industry, back injuries assume great importance. The frequency of the complaint "I've hurt me back" becomes almost nauseating. A particularly fruitful week of such complaints led to an investigation of all histories of back injury reported in the Electricity Commission of New South Wales during the past six years. The figures which emerge from this search are quoted below.

TABLE I.

Year: First Episode before June 30.	Number of Back Injuries.	Days Lost.	Total Days Lost for All Accidents.
1953	66	1051	—
1954	95	1902	—
1955	106	2423	—
1956	109	2480	17,444
1957	134	4765	17,244
1958	133	3530	27,962

TABLE II.

Weeks Off Work.	Number of Subjects.	Time Lost in Working Days (Five in a Week).	Average Period Off Work. (Days.)
Under 3 ..	465	3078	6·62
3 to 6 ..	85	1937	22·79
6 to 20 ..	62	3353	54·08
20 to 40 ..	20	2657	132·85
Over 40 ..	11	5126	466·00

The total number of employees was approximately 5000 in 1953, and 8589 in 1958. The number of employees considered in the present survey is 14,507 (5918 have now resigned, 8589 are still in the Commission's employment). The number off work with back injuries was as follows: now resigned, 121; still employed, 522; total, 643. The particulars are as shown in Tables I and II.

Of the 643 individuals who sustained back injuries, 598 resumed full work (many after a period of selected work), 30 resumed selected work and 15 did not resume work.

TABLE III.

Weeks Off Work.	Number of Cases.	Age (Years).					
		Under 30.	30 and Over.	40 and Over.	50 and Over.	60 and Over.	Average.
6 to 20	62	3	17	25	13	4	44
20 to 40	20	1	7	6	5	1	42½
Over 40	11	1	2	3	3	2	47½

The number of X-ray examinations recorded was 133; negative findings were obtained in 64 and positive findings in 69.

The age incidence of back injuries causing absence from work for more than six weeks is shown in Table III.

The types of accident and injury of the same group are shown in Table IV.

In Table V will be found set out the information concerning the 32 cases in which intervertebral disks were injured.

The operations performed in cases of intervertebral disk injury, and their results, are set out in summary form in Table VI.

TABLE IV.

Weeks Off Work.	Accident.[1]							Type of Injury.[2]										Referred to Consultant.	
	Primary.					Recurrent.		Primary.							Recurrent.			Yes.	No.
	A.	B.	C.	D.	E.	A.	D.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.		
6 to 20 ..	8	21	15	15	3	13	4	22	18	17	2	1	2	—	8	7	2	39	23
20 to 40 ..	1	4	6	6	3	—	2	3	8	4	—	—	3	2	—	1	2	18	2
Over 40 ..	0	2	3	5	1	—	6	1	4	5	—	—	1	—	—	1	1	11	0

[1] A, simple bend; B, heavy lift or pull; C, wrench or jerk; D, fall and jar; E, serious accident.
[2] a, muscular; b, lumbo-sacral, with or without sacro-iliac strain; c, intervertebral disk lesion, new; d, intervertebral disk lesion, old, aggravated; e, contusions; f, fracture; g, pilonidal abscess.

Comment.

I offer a few short comments on the game as it appears to an old player standing on the sideline. I see all the moves, but take no part beyond offering an occasional shouted word of comment or advice, which may be accepted or rejected by the players, but which has no official standing. I see these men at work, I see them after their accident, during treatment and when they return to work.

1. The number of workmen so injured is much less than one would think. The impression of frequency is given by the long-term complaints of a few.

2. The vast majority of people with strains and sprains recover in a couple of weeks. The important factor in their treatment is rest for an adequate time, followed by graduated exercise during recovery. To hasten unnecessarily at first leads to the state of "chronic strain".

3. A full diagnosis followed by a long-term plan of treatment should be possible after the initial period of rest.

TABLE VI.

Operation.	Number of Subjects.	Result.
Laminectomy	2	Poor.
Laminectomy with interspinous or posterior fusion	2	Poor 1, good 1.
Laminectomy with interbody fusion ..	4	Poor 2, good 2.
Laminectomy with interbody fusion at second operation	1	Fair only.

To delay this and to potter round with tentative treatment for months wastes time and lowers the patient's morale.

TABLE V.

Subject Number.	Age. (Years.)	Type of Accident.[1]	Treatment.	Result.	Job.
Off Work 6 to 20 Weeks.					
1	63	D (Cervical)	Collar, physiotherapy, etc.	Recovery; full work.	Sub-foreman.
2	57	D	Rest, brace, physiotherapy; operation advised.	Still off work.	Labourer.
3	40	D	Rest, plaster spica for 6 weeks, physiotherapy.	Full work.	Patrolman.
4	45	A	Bed rest, brace; light work for 3 weeks.	Full work.	Boiler cleaner.
5	64	C	Manipulation, physiotherapy; recurrence; manipulation, corset.	Full work.	Linesman.
6	43	B	Rest, belt, Taylor's brace; selected work for 12 months.	Full work.	Linesman.
7	58	C	Plaster jacket for 6 weeks, physiotherapy.	Full work.	Electrician.
8	39	B	Rest, Taylor's brace, physiotherapy; recurrence: manipulation.	Selected work.	Carpenter.
9	48	C	Rest, etc.	Full work.	Battery attendant.
10	53	D	Rest, etc.	Full work.	Fitter's labourer.
11	40	D	Rest, manipulation, physiotherapy. Recent recurrence: manipulation.	Full work. Selected work.	Rigger.
12	37	C	Belt; operation advised.	Selected work.	Labourer.
13	40	B	Rest. Recurrence: manipulation.	Full work. Full work.	Greaser.
14	36	C	Plaster jacket for 2 months, corset for 2 months.	Full work.	Fitter.
15	56	B	Laminectomy and posterior fusion in 1952; recurrence: rest.	Full work.	Fitter.
16	48	A	Recurrence of symptoms; belt, rest.	Selected work.	Storeman.
17	44	A	Rest, manipulation, physiotherapy.	Full work.	Greaser.
18	60	B	Prolonged rest, physiotherapy.	Full work.	Labourer.
19	48	C	Belt, light work; recurrences.	Resigned.	Labourer.
Off Work 20 to 40 Weeks.					
20	38	D	Rest, belt, laminectomy (only) 3 months after accident.	Light work.	Resigned.
21	44	B	Plaster jacket, belt, physiotherapy; interbody fusion advised.	Light work.	Fitter.
22	30	D	Manipulation, Taylor's brace, laminectomy (only); interbody fusion later.	Light work.	Plumber.
23	52	D	Plaster jacket, interbody fusion, good result.	Full work.	Bricklayer.
24	53	C	Many manipulations; laminectomy advised.	Light work.	Fitter.
25	27	D (Also fractured transverse processes)	Rest, belt; signs still present.	Light work.	Labourer.
Off Work Over 40 Weeks.					
26	49	D	Plaster jacket, belt, physiotherapy.	Light work.	Labourer.
27	61	C	Rest; aggravation of old injury.	Permanently unfit.	Blacksmith.
28	51	C	Rest, belt, manipulation, physiotherapy, brace, laminectomy with interbody fusion.	Still off.	Labourer.
29	38	C	Rest, brace, laminectomy with interbody fusion.	Light work.	Labourer.
30	48	B	Manipulation, belt, plaster jacket, brace, laminectomy with posterior fusion; to have interbody fusion.	Light work.	Labourer.
31	60	D	Plaster jacket, brace, laminectomy.	Light work.	Electrician.
32	27	B	Rest, brace, laminectomy with interbody fusion.	Light work.	Electrician.

[1] A, simple bend; B, heavy lift or pull; C, wrench or jerk; D, fall and jar; E, serious accident.

ILLUSTRATIONS TO THE ARTICLE BY MORRIS C. DAVIS AND ALFRED J. BARNETT.

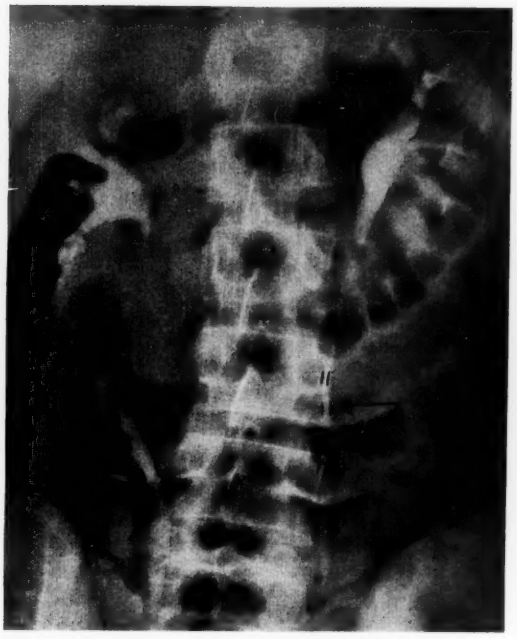

FIGURE I.

Intravenous pyelogram in Case I. Note the lateral displacement of the right ureter in comparison with the position of the left ureter. (The shadows of the ureters have been partly outlined by interrupted lines for the purpose of demonstration.)

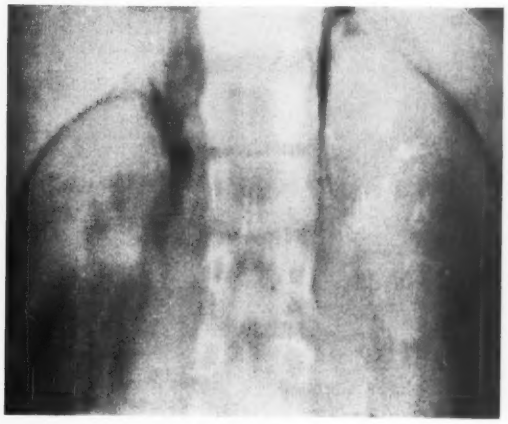

FIGURE IV.

Tomogram after perirenal insufflation of air in Case I. No tumour is demonstrated in either suprarenal region. The right suprarenal shadow appears larger than the left.

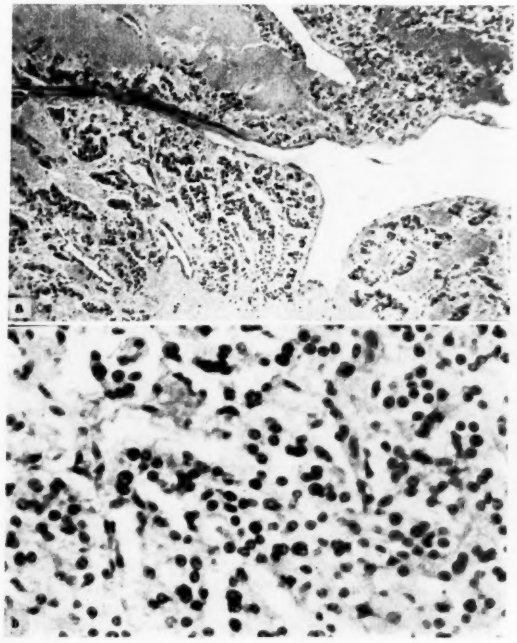

FIGURE VII.

Photomicrographs of tumour removed in Case I: (*a*) low power; (*b*) high power.

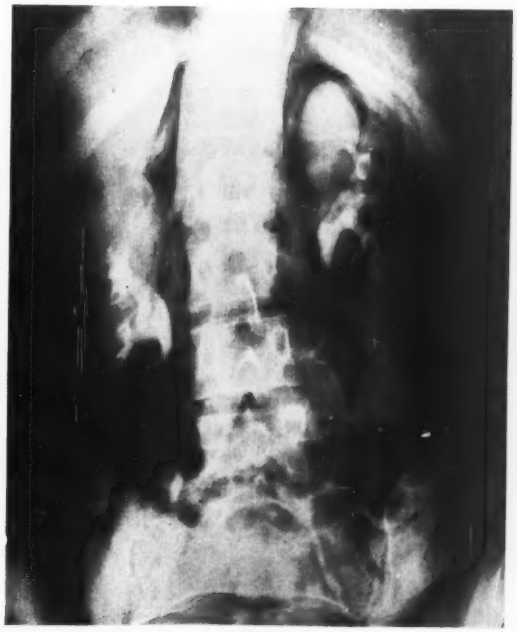

FIGURE VIII.

Skigram taken after perirenal insufflation of air and intravenous pyelography in Case II. A tumour is demonstrated in the region of the upper pole of the left kidney.

ILLUSTRATIONS TO THE ARTICLE BY M. G. F. DONNAN.

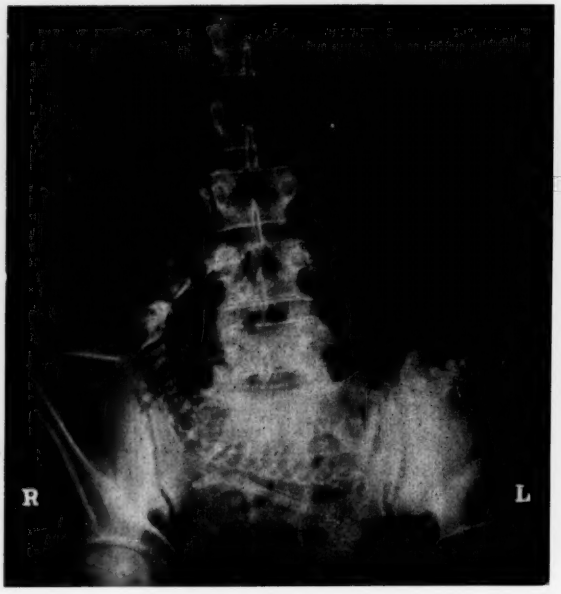

FIGURE I.
Skiagram of the uterus of the patient in Case I.

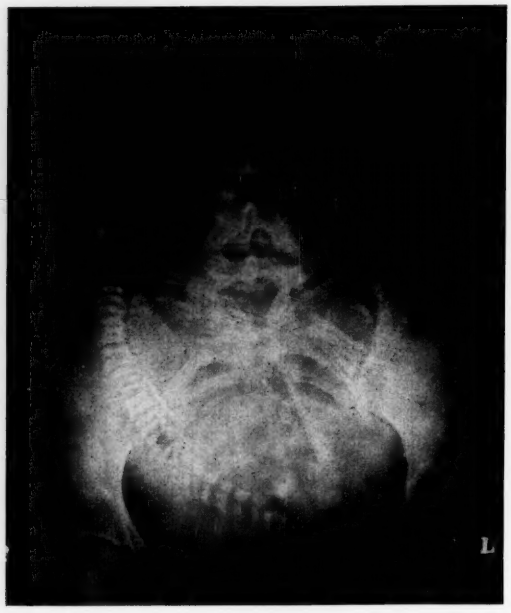

FIGURE III.
Skiagram of the uterus of the patient in Case II.

ILLUSTRATIONS TO THE ARTICLE BY GEOFFREY HAGARTY.

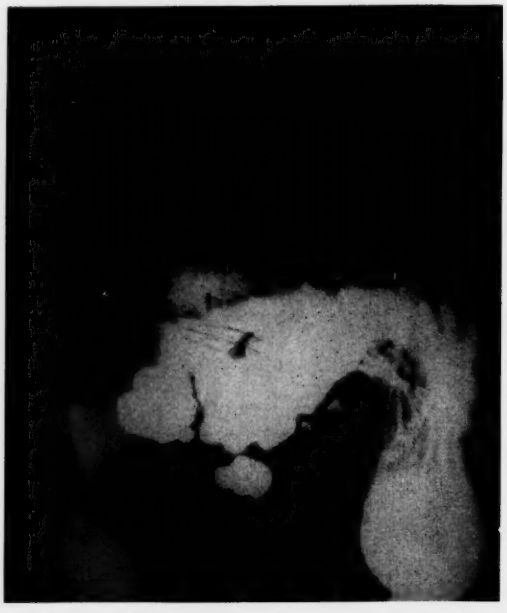

FIGURE I.

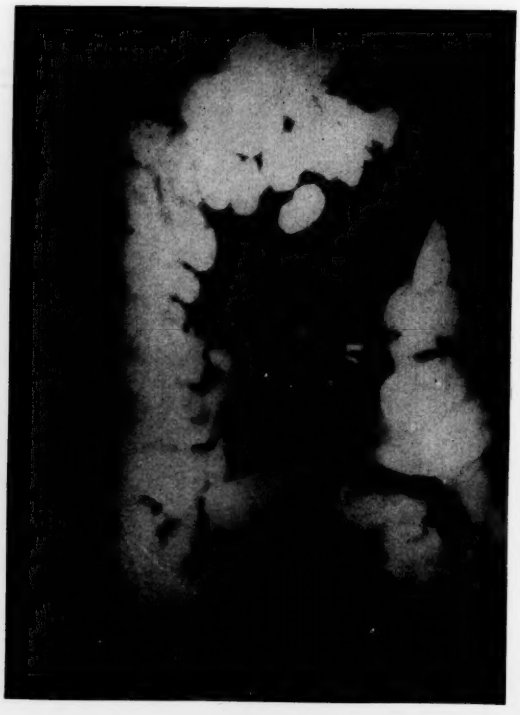

FIGURE II.

4. Early sciatic radiation of pain does not necessarily mean an intervertebral disk lesion.

5. Laminectomy alone does not give nearly such good results as when interbody fusion is performed as well. The donor site frequently causes more complaint than the back after this operation.

6. Conditioning of muscles during jacket fixation or after operation is an important part of treatment, which is often inadequately supervised.

7. Cooperation with the surgeon in finding suitable work in the industry hastens recovery in the long-term case when the patient can be assured that fusion is firm.

8. An adequate lumbo-sacral belt gives a great boost to morale during early activity after any painful back injury.

9. The worker who has exaggerated his symptoms becomes tired of complaining after a couple of weeks; but the man who continues to complain needs investigation and diagnosis. The accident need not have been severe.

10. I feel better about the complaint "I've got a pain in me back" since making this survey.

Acknowledgement.

I wish to express my thanks to the Chairman of the Electricity Commission of New South Wales for permission to publish these figures.

THE ADMINISTRATION OF HALOTHANE VAPOUR MEASURED BY A ROTAMETER.

By W. COLE,
Melbourne.

As halothane is not easily managed when vaporized from ether or trichoroethylene vaporizers, various special vaporizers have been made, capable of accurately producing vapour concentrations within safe and useful limits. Probably the most accurate of these is the apparatus described by Raventos (1956) for use in animal experiments, but this apparatus, excellent though it is, could not be easily used for clinical work on humans.

TABLE I.
Performance of the Vaporizer in an Operating Theatre.

Oxygen Flowing (c.cm.).	Volume of Halothane in Oxygen Vapour (c.cm.).	Cyclopropane Rotameter Reading.	Halothane Vaporized per Hour (c.cm.).	Concentrations (Percentage).
100	121	150	10	16·6
200	230	350	15	13·0
300	337	500	18	11·0
400	442	650	20	9·5
500	550	800	23	9·1

Most of the vaporizers designed for human use are made so that the entire gaseous outflow of the anæsthetic machine passes through the apparatus. Of these gases a variable part is passed over the liquid halothane and later joins the rest of the gases. This paper deals with an alternative type of vaporizer, designed to deliver a halothane in oxygen vapour, which is subsequently measured by means of the cyclopropane rotameter.

The apparatus (Figure I) consists of a 100 c.cm. bottle with a brass cap. The oxygen entry tube passes through one hole in the cap and reaches to within 2 cm. of the bottom of the bottle, while through a second hole the exit tube passes to end in a yoke block. A safety valve loaded to about 5 lb. per square inch is fitted to the inlet tube to eliminate any possibility of the bottle bursting through excess pressure.

In use the apparatus containing 15 cm. of halothane is screwed into the cyclopropane yoke of a gas machine and a supply of oxygen connected to the inlet tube. When the cyclopropane fine adjustment valve is opened, halothane in oxygen vapour flows through the cyclopropane rotameter. To this is added oxygen and nitrous oxide passed through their own rotameters, to give a halothane in nitrous oxide and oxygen mixture, which is used for the anæsthetic administration. The use of this apparatus has proved simple and satisfactory with 400 patients of all ages and degrees of physical fitness.

Performance Figures.

When 15 c.cm. of halothane are placed in the vaporizer the entering oxygen is delivered at about 0·5 cm. above the surface of the halothane. As the rate of flow through the vaporizer increases, the amount of halothane vaporized evenly increases, but because the concentration falls steadily at the same time, the amount vaporized is not directly proportional to the rate of flow. Table I shows

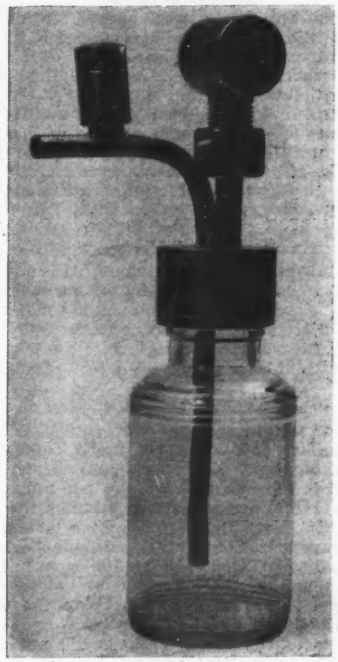

FIGURE I.

the performance of the vaporizer in an operating theatre at 68° F. with the halothane in the bottle at 65° F. Naturally, the halothane output of the vaporizer varies with the temperature and with the halothane liquid level in the vaporizer, but further tests and clinical experience suggest that under operating theatre conditions the variation would not exceed ± 20%, a variation which is small when considered against the tremendous variations in the anæsthetic tolerances of patients.

The first column in Table I shows the oxygen flows, the second shows the corresponding volume of halothane in oxygen vapour, and the third shows the reading on the cyclopropane rotameter for these rates of flow. The volumes of halothane vaporized per hour are shown in the fourth column, and the fifth column gives the corresponding concentrations by volume of halothane in oxygen. (The cyclopropane rotameter is graduated only to 750 c.cm., and the 800 c.cm. quoted is an estimate.) It will be seen that the maximum vaporizing power with the oxygen delivered over the surface of the halothane is 23 c.cm. per hour. This is sufficient for anæsthetic purposes if used in an absorption apparatus, but at the same time is small

enough to make the administration of an acute overdose difficult.

Passing oxygen through the liquid halothane, which can be achieved by placing more than 25 c.cm. in the bottle, when the oxygen entrance tube ends below the surface, roughly doubles the maximum vaporizing capacity of the apparatus to 50 c.cm. per hour. This method has been tested, but the weaker vapour obtained by passing oxygen over the surface of the halothane liquid has proved more manageable and has been preferred.

Methods of Use.

The carbon dioxide absorption method has been used, except for babies. Three schemes have been tested, and will be described in more detail. Anæsthesia has been induced with thiopentone, and when the patient has become unconscious the administration of halothane nitrous oxide oxygen has been commenced.

First Method.

The oxygen rotameter was opened to one litre per minute, and the nitrous oxide rotameter to two litres. Halothane vapour at a scale reading of 650 c.cm. was added, and when the patient had breathed sufficient to become anæsthetized to the third stage, the amount of halothane vapour was reduced to the maintenance level. Used in this way the consumption of halothane was between 10 and 15 c.cm. per hour. If the patient was resistant, the injection of 0·1 gramme increments of thiopentone during the induction stage was helpful, but was rarely necessary.

Second Method.

The administration was commenced as in the first method, but when the third stage of anæsthesia had been reached the oxygen and nitrous oxide flows were both reduced to 500 c.cm. per minute, and the halothane vapour was reduced to a maintenance level. The consumption of halothane with this method was 5 to 6 c.cm. per hour.

Third Method.

Again the administration was commenced as before with a three-litre flow of oxygen and nitrous oxide. With the establishment of third stage anæsthesia the rates of flow were reduced first to one litre per minute of oxygen and nitrous oxide, and after five minutes the oxygen was reduced to 250 c.cm., the nitrous oxide turned off and the halothane vapour reduced to a maintenance level, usually a scale reading of about 50 to 100 c.cm. This method required the use of about 4 c.cm. of halothane per hour, and corresponded in a general way to the use of cyclopropane without an overflow.

The results of the three methods did not appear to be different. On theoretical grounds one would expect frequent changes of soda lime to be necessary with the slower rates of gas flow, to prevent carbon dioxide accumulation.

Discussion.

The method of separate vaporization of liquid anæsthetic agents and the subsequent addition of this vapour to nitrous oxide and oxygen was described by Professor Lucien E. Morris in 1952, and has been incorporated in the Foregger anæsthetic machine. The apparatus described here operates on the same general principle, and is an attempt to utilize existing anæsthetic equipment without modification.

Initial fears that the halothane vapour would corrode the anæsthetic apparatus proved groundless. Microscopic examination of the rotor after six months' use showed no etching.

If a metal "Y"-piece is used, it is possible to use the one source of oxygen for the oxygen rotameter and for the halothane vaporizer.

Acknowledgement.

I wish to acknowledge the help of Imperial Chemical Industries Ltd. and their medical executive, Mr. Wolf, who made available the halothane ("Fluothane") used in the investigation.

The photograph of the apparatus was taken by the Photographic Department of the Victorian Eye and Ear Hospital (chief photographer, Mr. Cottier).

References.

MORRIS, L. E. (1952), "A New Vaporizer for Liquid Anæsthetic Agents", *Anesthesiology*, 13: 587.

RAVENTOS, J. (1956), "The Action of Fluothane: A New Volatile Anæsthetic", *Brit. J. Pharmacol.*, 11: 394.

Reports of Cases.

PHÆOCHROMOCYTOMA: DIAGNOSIS AND MANAGEMENT.

By MORRIS C. DAVIS,

Honorary Physician to In-Patients, Alfred Hospital, Melbourne,

AND

ALFRED J. BARNETT,

Associate Director, Clinical Research Unit, Alfred Hospital, Melbourne.

PHÆOCHROMOCYTOMA provides one of the few instances in which hypertension can be truly cured. To allow treatment to be undertaken before permanent damage to vessels and resulting complications ensue, early diagnosis is of great importance. However, recognition of the disorder is sometimes unduly delayed. In this paper three cases are presented, one in detail to illustrate the difficulties of diagnosis, the investigational procedure by which it may be established, and the dramatic benefit obtained from successful operation, and two others more briefly to illustrate different modes of presentation.

Case 1.

A boy, aged 15 years, presented to one of us (M.C.D.) in June, 1957. His mother, a trained nurse, had recently observed a death from nephritis in her hospital and was deeply concerned about her son, who she understood had a similar condition. For three and a half years the lad had suffered from headaches, particularly provoked by exercise, during which he would become morose, unhappy and virtually immobilized. The intense headache was accompanied by photophobia, severe bouts of vomiting and copious sweating, which left him limp and enervated. Despite this, he courageously maintained his school work in a carpentry course at a technical college, pitifully fighting what seemed to his parents a losing battle. Of latter years he had learned to live with his disability, and the headache had become a little less frequent and less severe, and was no longer associated with vomiting. His past history included chicken-pox and measles as a child, hepatitis at the age of 11 years, and scarlet fever at 13 years. Apart from a statement that one cousin had suffered from hypertension, the family history revealed no stigmata of this condition. His mother and father and his sister, aged 18 years, were all well.

In October, 1956, his headaches were investigated at a public hospital and the findings at that time may be summarized as follows. His blood pressure was 210/155 mm. of mercury. The heart was enlarged and the apex beat was four and a half inches from the mid-sternal line; a soft apical systolic murmur and aortic systolic bruit were present. Examination of the ocular fundi showed bilateral papilloedema, with exudates and hæmorrhages, silver-wiring of the arteries and nipping of the veins. The urine contained no albumin. Routine renal function tests, microscopic examination of the urine and intravenous pyelography gave normal results. Radiographic examination of the chest showed slight widening of the aorta. After the intravenous injection of 5 mg. of phentolamine ("Regitine", Ciba) the blood pressure fell from 230/180 to 200/115 mm. of mercury within two

minutes, but rose to 220/160 mm. of mercury in a further six minutes. This result was regarded as "negative" for phæochromocytoma. Injection of tetraethyl-ammonium bromide produced no significant change in blood pressure. He was finally allowed to leave hospital, taking pentolinium ("Ansolysen") and hydralazine ("Apresoline"). His blood pressure on discharge was 160/100 mm. of mercury.

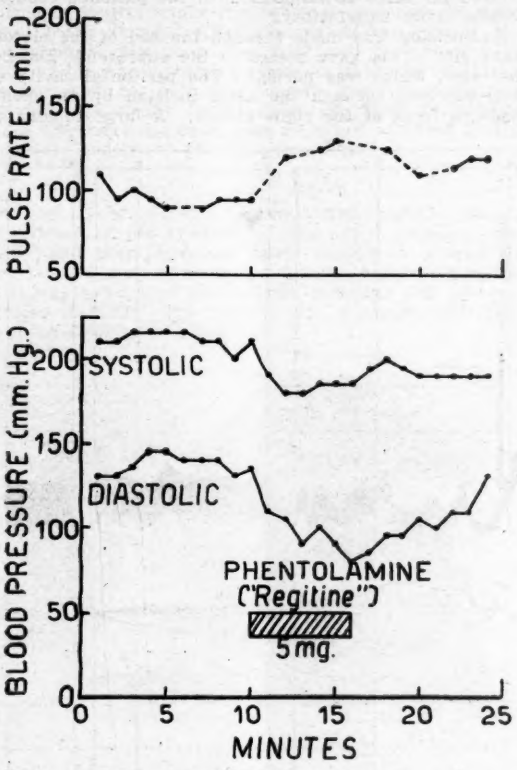

FIGURE II.
Phentolamine ("Regitine") test in Case I.

The presenting picture in June, 1957, was that of a well-developed lad, looking more like an 18 year old, with a frowning expression and keeping his eyes away from the light because of a severe headache. His blood pressure was then 240/180 mm. of mercury. His radial vessels *were tense, but not thickened. The apex beat was forceful,* of left ventricular type, and visible as a tremendous lift in the mid-axillary line. A systolic murmur was audible at all areas, and the second aortic sound was grossly accentuated and much louder than the pulmonary second. The femoral and radial pulses were synchronous, and the blood pressure in the leg was 250/170 mm. of mercury. Examination of his ocular fundi showed *bilateral papilloedema and arteriolar narrowing, but no* hæmorrhages or exudates. His skin was moist and his hands were clammy, and there was a fine tremor of the outstretched fingers. No thyroid tumour was palpable and no increased jugular venous pulse was noted. No *abdominal mass could be felt. The urine contained no* albumin or pathological deposits, and renal function tests revealed good concentrating power and normal clearance values.

The presence of extreme hypertension in a young man *with no evidence of renal disease or of coarctation of the* aorta, and with the positive features of episodic headache provoked by exercise and of excessive sweating, led to a *clinical diagnosis of phæochromocytoma. He was therefore* admitted to the Alfred Hospital for full investigation of this possibility. His blood pressure, recorded hourly, showed considerable fluctuation, but was usually above 200/140 mm. of mercury, with readings sometimes as high as 290/200 mm. of mercury. Tests were performed to assess the cardio-vascular and renal state and to substantiate the clinical diagnosis of phæochromocytoma.

Tests to Assess the Cardio-Vascular and Renal State.

An X-ray examination of the heart revealed no abnormality. An electrocardiogram was of left ventricular strain pattern. Renal function tests (repeated for the third time) gave normal results. Intravenous pyelography gave a normal result, except that the right ureter was bowed laterally, its direction markedly contrasting with that of the left ureter, which pursued a natural downward course (Figure I). (This was interpreted as possibly due to a displacement of the ureter laterally by a mass on the right side, a deduction later proved correct at operation.)

Tests to Demonstrate Excess Production of Adrenergic Hormones.

A glucose tolerance test produced a normal result, indicating that there was no marked excess of circulating adrenaline, as this produces hyperglycæmia.

Tests of heat elimination from the hand gave the following results: resting, 11·8 calories per 100 ml. per minute; during reflex heating, 8·9 calories per 100 ml. per minute. In the absence of structural occlusive arterial disease the absence of vasodilatation from reflex heating indicates the presence of a potent humoral vasoconstrictor agent.

Intravenous injection of 5 mg. of phentolamine ("Regitine", Ciba) over a period of five minutes resulted in a fall in blood pressure lasting about 15 minutes, with a

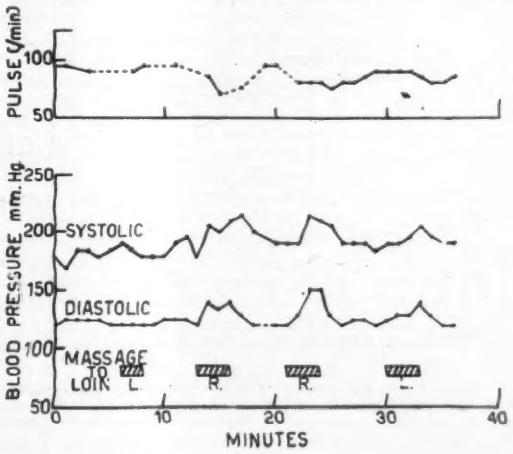

FIGURE III.
Effect of massage of each loin in turn in Case I. Throughout the periods indicated by L and R, massage was applied to the left and right loins respectively.

maximum fall in the diastolic pressure of 50 mm. of mercury (Figure II). This was interpreted as indicating *a raised level of circulating noradrenaline.*

Estimation of pressor amines in the urine by a biological assay, using the rabbit's ileum, revealed the excretion of 900 μg. per litre or 780 μg. in 24 hours. (The normal value is less than 80 μg. in 24 hours.)

Tests to Demonstrate the Site of the Phæochromocytoma.

Massage of the right loin produced a sharp rise in blood pressure with a fall of pulse rate (Figure III). Massage of the left loin produced no such effect.

An X-ray examination of the suprarenal areas was performed as follows. Retroperitoneal insufflation was

carried out, about 500 ml. of air being introduced by the presacral route, while an intravenous pyelographic examination was performed. Subsequent tomograms showed no abnormality in either suprarenal region (Figure IV).

Summary of Findings.

It is convenient to summarize briefly the findings up to this point: (*a*) The clinical evidence leading to a strong suspicion of phæochromocytoma (gross hypertension with episodic exacerbations associated with sweating and severe headaches on exertion, occurring in a young lad with normal renal function). (*b*) Evidence of excessive production of adrenergic hormones, supplied by the low heat elimination from the hand even after "reflex" heating, the positive result of the phentolamine test, and the greatly increased excretion of pressor amines in the urine. (*c*) Evidence concerning the site of the tumour, supplied by the lateral displacement of the right ureter, the pressor response to massage of the right loin, and the normal suprarenal aeras as demonstrated radiologically after air insufflation. The findings pointed to a phæochromocytoma in the right para-aortic region.

In an attempt to control the blood pressure before operation, phentolamine given by mouth (up to 160 mg. every four hours) and later dibenzylene (up to 50 mg. every 12 hours) were employed, without significant effect.

Operation.

Operation was performed by the late Mr. Robert Officer. Two intravenous infusions were first set up, one for blood and the other for saline or noradrenaline as indicated. Phentolamine was kept at hand for intravenous injection as required. Anæsthesia was induced by means of "Pentothal" given intravenously at approximately 9.30 a.m. An intravenous injection of "Scoline" was given in order to obtain relaxation for tracheal intubation. Relaxation was maintained throughout the operation by means of intravenous injections of "Flaxedil". Anæsthesia was maintained by means of nitrous oxide and oxygen.

Immediately after intubation the systolic blood pressure rose to 270 mm. of mercury and the pulse rate to 180-190 per minute, and commencement of the operation was delayed for some 25 minutes until the patient's condition became more satisfactory.

An incision was made through the bed of the eleventh right rib. This gave access to the suprarenal gland on that side, which was normal. The peritoneal cavity was then explored through the same incision by an opening made in front of the right kidney. A large tumour was felt high up in the abdomen lying in front of the aorta and inferior vena cava, and behind the second and third parts of the duodenum and pancreas. The incision in the right loin was closed, the patient placed in a supine position and the abdomen opened through an upper right paramedian incision. The tumour was approached by incising the peritoneum at the right border of the mesentery of the small intestine, the superior mesenteric vessels which passed across its anterior surface being displaced to its left side. The lower border of the mass was found to lie at the level of the origin of the inferior mesenteric artery. It was densely adherent to surrounding structures, and the right testicular and the inferior-pancreatico-duodenal vessels had to be divided.

Dissection was commenced at the lower border of the tumour, where three veins were ligated; but owing to difficulty in removing the tumour from the great vessels, dissection was then commenced at its upper border beneath the pancreas. It was found to have a large

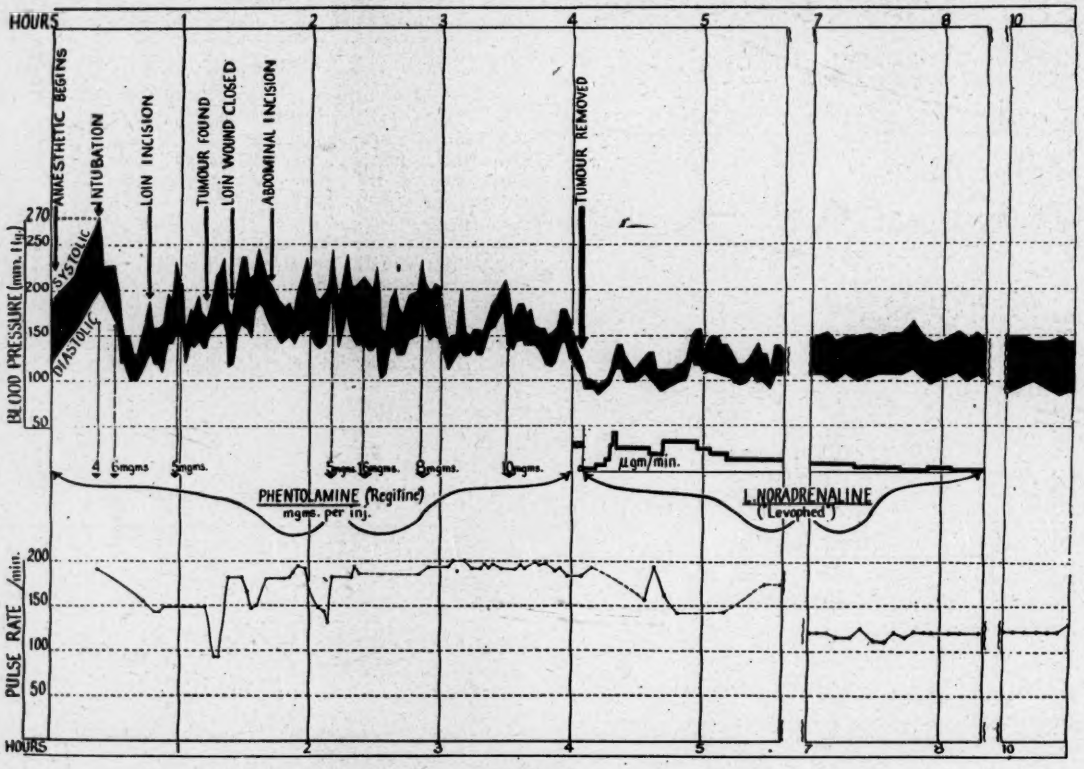

FIGURE V.

Record during operative and immediate post-operative periods of blood pressure and pulse rate in Case I. Times of administration and dose of phentolamine ("Regitine") and l-noradrenaline ("Levophed") are shown in the centre of the figure between the records of the blood pressure and pulse rate.

arterial supply from the right renal artery (and also two arteries rising directly from the aorta). Three veins passed directly backwards from its substance into the inferior vena cava.

The operation was prolonged both by the difficulty in dissection and by the absence of exact knowledge of the blood supply and venous drainage of the tumour. The changes in blood pressure and pulse rate during operation are depicted in Figure V. Phentolamine was injected as required to control undue rise in blood pressure, the total amount being 54 mg. After removal of the tumour the blood pressure fell to a low level and an infusion of noradrenaline was required to raise it; this was continued after operation for only four hours. The blood pressure then remained steady in the range of 130/80 to 150/100 mm. of mercury; the pulse rate remained constant at 120 per minute and there was little sweating.

Post-Operative Course.

The post-operative course was uneventful and the patient was relieved of his symptoms. The blood pressure rose slightly and then remained fairly steady at a level of about 160/110 mm. of mercury. Twelve days after operation it was noted that papillœdema, although still present, was less marked. The patient was clinically well and was discharged to his home.

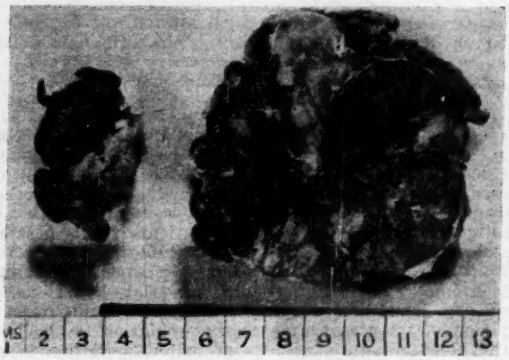

FIGURE VI.
Macroscopic appearance of cut surface of tumour removed in Case I (scale in centimetres).

After the operation the resting heat elimination was 10 calories per 100 ml. per minute, rising to 51 calories per 100 ml. per minute from reflex heating — a normal response. The pressor amine content of the urine was 13 μg. per litre (11 μg. in 24 hours) — a normal value. The left heart strain pattern in the electrocardiogram became less marked.

The symptomatic benefit can best be assessed from the appreciation expressed by the patient's mother. She wrote stating that, whereas prior to operation he was irritable and depressed from his recurrent headaches, he has now "completely changed his personality and is a happy, lovable boy and a joy to live with". He is now in full work and his blood pressure is 118/70 mm. of mercury.

The tumour measured 8 cm. by 7 cm. and weighed 131 grammes. It was lobulated and encapsulated, with many soft hæmorrhagic areas (Figure VI). Microscopic examination showed it to have the structure of phæochromocytoma (Figure VII). It showed a moderate degree of nuclear variation, but very little mitotic activity.

Case II.

A woman, aged 30 years, had suffered from bronchial asthma for many years. Over the past 12 months she had suffered from increasing dyspnœa on exertion and from attacks of palpitation, headache and sweating, provoked particularly by drinking hot tea. She was admitted to hospital in November, 1957, with a four-day history of severe dyspnœa, cough and pyrexia. She was a thin, pale, young woman, sweating and dyspnœic. Her blood pressure was 240/120 mm. of mercury and her pulse rate 120 per minute. The apex beat was extremely forcible. The chest had the configuration characteristic of emphysema, and numerous high-pitched rhonchi were heard. Radiographic examination showed bronchopneumonic consolidation at the base of the right lung.

She was treated with penicillin and streptomycin and the fever rapidly subsided. On one occasion she was noted to be sweating profusely, and a blood pressure of 270/160 mm. of mercury was recorded. A phentolamine test produced a marked fall in blood pressure. The results of other tests were as follows. The glomerular filtration rate (inulin clearance) was 85 ml. per minute, and the renal plasma flow (clearance of para-amino hippuric acid) was 253 ml. per minute, the filtration fraction being 0·34. (The glomerular filtration rate and renal plasma flow are both reduced in comparison with the normal value, but there is a greater proportional reduction of the renal plasma flow, giving a high filtration fraction.) An electrocardiogram revealed sinus rhythm and left ventricular enlargement. A glucose tolerance test gave the following results: the fasting blood sugar level was 140 mg. per 100 ml.; the blood sugar levels at half-hour intervals after 50 grammes of glucose had been given orally were respectively 275, 315, 330 and 290 mg. per 100 ml. Estimation of heat elimination from the hand gave the following figures: resting, 6·3 calories per 100 ml. per minute; after reflex heating, 8·0 calories per 100 ml. per minute. The amount of pressor amines excreted in the urine was approximately 300 μg. in 24 hours. Chromatography followed by fluorimetry showed a noradrenaline-adrenaline ratio of approximately 4 : 1. Retroperitoneal air insufflation and pyelography revealed an oval tumour (4 cm. long, 3 cm. wide) in the region of the upper pole of the left kidney (Figure VIII).

After the investigations had been completed, the patient was treated orally with phentolamine for a week, with some reduction in blood pressure. At operation, Mr. K. N. Morris removed the tumour through an incision through the bed of the eleventh rib. Undue rise in blood pressure was prevented by injection of phentolamine, and the post-operative fall was treated by infusion of noradrenaline. After the operation the blood pressure was reduced almost to normal, being approximately 150/110 mm. of mercury, and although the patient continued to suffer from asthma, she was relieved of her other symptoms.

Striking features in this case were the characteristic attacks induced by drinking hot fluids, and the hyperglycæmic blood sugar curve. The tumour was shown to produce adrenaline as well as noradrenaline. It was situated in the common site — in one adrenal gland.

Case III.

For five years a man, aged 54 years, had been under treatment for diabetes, for which he was receiving injections of insulin. Six weeks prior to his admission to hospital in May, 1957, he had collapsed at his work and had apparently lost consciousness for about one hour. From that time he had suffered from headaches. For four weeks he had also complained of pain in his right leg from the hip to the ankle, and for three weeks of paræsthesia of the left side of his head and his left arm.

He was a thin, nervous, middle-aged man, with a blood pressure of 210/125 mm. of mercury. The urine contained sugar and a trace of albumin, but there were no other positive clinical findings. It was noted that his blood pressure was labile and remained so after oral treatment with pentolinium, fluctuating between 210/120 and 140/90 mm. of mercury without any consistent relation to the medication. Intravenous injection of phentolamine produced a marked fall in blood pressure; after 10 mg. it fell from 230/130 to 90/50 mm. of mercury, and after 5 mg. from 195/110 to 135/80 mm. of mercury. Although he gave no history of excessive sweating, this was noted on

occasions in hospital. The results of other tests were as follows. An electrocardiogram revealed sinus rhythm and a left heart strain pattern. Radiographic examination of the chest revealed no abnormality. Routine renal function tests gave normal results apart from proteinuria. Intravenous pyelography revealed that the right kidney was considerably lower than the left, but no other abnormality. The blood sugar level was variable, but hyperglycæmic on occasions (one reading of 490 mg. per 100 ml.). The excretion of pressor amines in urine amounted to 242 μg. per litre. Massage of the left loin produced no change, but when the right loin was massaged the blood pressure rose from 210/120 to 300/180 mm. of mercury; the patient became pale and complained of tingling of the left side of his face. After the intravenous injection of 5 mg. of phentolamine the blood pressure fell to 150/80 mm. of mercury. Retroperitoneal air insufflation and X-ray examination revealed that the left suprarenal area was normal, but there was failure to outline the right suprarenal area.

At operation, Mr. K. N. Morris explored the right adrenal gland through an incision through the bed of the eleventh rib and removed a tumour 8 cm. in diameter. Intermittent injections of phentolamine were given to prevent undue rise in blood pressure, 45 mg. being given in all. After the removal of the tumour the blood pressure fell and continuous intravenous infusion of noradrenaline was required for several hours to maintain a normal level.

The patient was relieved of his headaches and the tingling in his face and arm, the blood pressure settled at 160/100 mm. of mercury, and his diabetes was controlled with diet alone. The excretion of pressor amines in his urine became normal. Unfortunately, since his discharge from hospital the patient has developed other symptoms — mild congestive cardiac failure, pains in his legs probably due to peripheral neuritis, and alimentary symptoms. These are probably not related to the phæochromocytoma.

Discussion.

Physiological Disturbance.

Phæochromocytoma presents an example of a tumour producing a marked excess of a substance (or substances) active physiologically. Until comparatively recent times the hormone was generally assumed to be adrenaline, although there were often marked differences between the action of this substance and the disturbance produced by the hormone. Thus adrenaline does not generally cause a rise in the diastolic blood pressure, whereas this is usually markedly raised in a patient with a phæochromocytoma; also adrenaline causes pronounced tachycardia, whereas in patients with phæochromocytomata the heart rate may be normal or even slow. In 1946 von Euler isolated a sympathomimetic substance from adrenergic nerve fibres and in 1948 identified this substance as 1-noradranaline, thus indicating that the adrenergic transmitter was not adrenaline but noradrenaline. Shortly after this, Goldenberg, Pines *et alii* (1948), Barcroft and Konzett (1949) and Barnett *et alii* (1950) investigated the action of noradrenaline in man. In brief, noradrenaline produces diastolic hypertension (whereas adrenaline does not increase the diastolic blood pressure), a slowing of the heart rate (whereas adrenaline causes a rise), a constriction of both muscle and skin vessels (whereas adrenaline causes constriction of skin vessels and dilatation of muscle vessels), no change or fall in cardiac output (whereas adrenaline causes a rise), and is practically devoid of metabolic activity (whereas adrenaline produces marked hyperglycæmia). Barnett *et alii* (1950) compared the action of noradrenaline in man with the changes occurring in phæochromocytoma. In one of their cases, in which a differential analysis of noradrenaline and adrenaline in the tumour was made, the main hormone present was noradrenaline (Holton, 1949).[1] A high proportion of noradrenaline has also been noted by other workers who have reported on the hormone content of adrenal tumours (for example, Beyer *et alii*, 1951), although sometimes the chief hormone may be adrenaline (Pitcairn and Youmans, 1951).

[1] Tumour number 2 in Holton's paper.

Recognition of Phæochromocytoma.

Although uncommon, phæochromocytoma is not extremely rare. In 1954 Whiteside stated that he could find only three reports in local (Australian) journals since 1920. These included two cases reported that year from Tasmania (Lewis and Knight, 1954; Morris *et alii*, 1954). From examination of post-mortem reports of four major public hospitals in Melbourne he was able to find 10 cases in which the tumour was found at necropsy. Since 1950, when estimations of pressor amines in the urine were first undertaken at the Baker Medical Research Institute in Melbourne we have been able to assist in making the diagnosis in 10 living patients as shown in Table I.

TABLE I.

Centre.	Cases.	Years.
Melbourne	6	1954 (2), 1957 (4)
Sydney	1	1956
Launceston[1]	1	1953
Hobart[1]	1	1953
Brisbane	1	1955
Total	10	—

[1] Previously reported by Lewis and Knight (1954) and by Morris *et alii* (1954).

It is important that the diagnosis of phæochromocytoma should not be missed, because early removal of the tumour may lead to return to normal; if the hypertension is allowed to persist, irreversible changes may occur (Barnett *et alii*, 1950). However, it is not practicable to investigate fully all hypertensive patients for a possible phæochromocytoma. When, then, should this possibility be entertained and appropriate tests performed? Although phæochromocytoma may mimic essential hypertension, there are usually some features that should lead to suspicion of its presence: excessive variation in the level of the blood pressure, attacks of pallor, sweating, glycosuria, episodic nature of symptoms. Even in the absence of such features, it is advisable to exclude this condition in all cases of "malignant" hypertension (as indicated by papilloedema) and in severe hypertension in young people, particularly those with normal renal function.

Investigational Procedure.

In cases in which phæochromocytoma is suspected, in addition to the routine tests for assessment of hypertensive disease and exclusion of other primary causes, special tests are performed, first, to obtain evidence of the presence of the production of the adrenergic hormones adrenaline and noradrenaline, and secondly, to demonstrate the site of the tumour producing them. The nature of these tests is indicated by the case histories given, and little elaboration is required here. Phentolamine is the most effective and least dangerous adrenergic blocking agent. When this drug is given intravenously in a dose of 5 mg. over five minutes, a marked fall in diastolic blood pressure occurs if the elevation is due to noradrenaline, and only a slight fall in essential hypertension (Gifford *et alii*, 1952; Barnett and Fowler, 1953). False positive responses are reported, but are rare (Gifford *et alii*, 1952). They occur particularly in uræmia and after heavy sedation, but may occur occasionally in the absence of these features (Ross, 1954). False negative results are also rare. An apparent example is given by the result from another public hospital in Case I in which, although the injection of phentolamine was followed by a fall of 30 mm. of mercury in the systolic blood pressure and 60 mm. of mercury in the diastolic pressure, this fall was not maintained. This may have been due to the fact that the phentolamine was injected rapidly. It is our

practice to inject the phentolamine slowly (over five minutes), and particular emphasis is placed on the change in diastolic blood pressure rather than that of the systolic blood pressure (Barnett and Fowler, 1953). We regard the result from the other hospital as inconclusive. In general, phentolamine is remarkably free from untoward side effect. However, one fatality has been attributed to its use (Emanuel *et alii*, 1956). In cases in which the blood pressure is normal when the patient is under investigation, a "provocative" test with histamine (Roth and Kvale, 1945) may be used. It is advisable to have phentolamine at hand in case the rise in blood pressure is unduly large.

The most definite evidence for the presence of phæochromocytoma is the demonstration of a greatly increased excretion of noradrenaline in the urine (Engel and Euler, 1950; Goldenberg, Serlin *et alii*, 1954). Various assay methods are available. We use a biological procedure with rabbit ileum as the test organ. In our experience, patients with essential hypertension rarely excrete over 80 μg. per litre of pressor amines estimated as noradrenaline. We have experienced only one case in which this was exceeded, and no phæochromocytoma was demonstrated (100 μg. per litre; 110 μg. in 24 hours). In cases of phæochromocytoma diagnosed by this method, we have found that the excretion of pressor amines has ranged from 150 to 975 μg. per litre and 190 to 780 μg. in 24 hours. Manger *et alii* (1954) have found that in patients with paroxysmal hypertension due to phæochromocytoma, plasma concentration of pressor amines in the normotensive phase may be normal, but is raised if a provocative dose of histamine is given in the test period. It would therefore be expected that in such cases urinary excretion of pressor amines might also be normal during a normotensive phase, and this has, in fact, been observed (Litchfield and Peart, 1956; Reutter *et alii*, 1957). For this reason it is advisable that the blood pressure be recorded several times in the period during which urine is collected, and if it is found to be normal or only slightly elevated, a "provocative" intravenous injection of histamine acid phosphate (0·1 mg.) should be given.

Once the presence of a phæochromocytoma has been established, the next problem is to discover its site. Rarely, the tumour may be felt as an abdominal mass. Evidence as to whether it is on the right or left side may sometimes be obtained by massaging the loins. An intravenous pyelogram may yield important information—for example, downward displacement of one kidney by a large tumour. In Case I, displacement of one ureter was significant. If the site is still in doubt, perirenal air insufflation is of great help, and may be combined, advantageously, with intravenous pyelography and tomography. Aortography has been used to demonstrate the vessels of the tumour, but is dangerous (Koonce *et alii*, 1953; Salz *et alii*, 1956).

Management.

Treatment is to remove the tumour. The pre-operative oral administration of adrenergic blocking drugs, such as phentolamine or dibenzylene, may be of use occasionally, but was of no great help in our cases.

The operation has recently been made safer, as illustrated by our cases, by the use of adrenergic blocking agents (such as phentolamine) before and during operation and pressor agents (such as noradrenaline) after removal of the tumour. The successful use of these methods has been described by various authors (Richards and Hatch, 1951; Apgar and Papper, 1951; Cobb *et alii*, 1953; Remine *et alii*, 1953; Morris *et alii*, 1954; Newton *et alii*, 1955; and various others). One disturbing feature in our Case I was the persistent tachycardia during operation. Whereas on the isolated heart noradrenaline produces tachycardia (Ahlquist, 1948), in man it produces bradycardia, which is due to a reflex slowing of the heart through a carotid sinus reflex, and which is abolished by atropine (Barnett *et alii*, 1950). It is possible that drugs with an atropine-like action used in anæsthesia may inhibit this reflex, thus allowing full play to the chronotropic action of noradrenaline and adrenaline; the anæsthetist should therefore be requested to be sparing in the use of atropine-like drugs.

Summary.

1. Early diagnosis of phæochromocytoma, by allowing surgical treatment to be undertaken at a time when the hypertension can be cured and vascular complications prevented, is of great importance.

2. A case of phæochromocytoma in a boy, aged 15 years, is presented in detail, to illustrate the difficulties in diagnosis, the investigational procedure and the good result which may be achieved by successful surgery; two other cases are briefly mentioned to illustrate other modes of clinical presentation.

3. A discussion is presented of the physiological disturbance produced by phæochromocytoma, the mode of recognition, appropriate investigational procedure and management of the condition with reference to the cases described in this paper and to the literature.

Acknowledgements.

Our thanks are due to Dr. T. E. Lowe, Director of the Baker Medical Research Institute, for helpful criticism of this paper; to Dr. G. Bentley and technicians of the Baker Medical Research Institute for the estimations of pressor amines in urine; to Dr. J. L. Frew and the Medical Superintendent of the Royal Melbourne Hospital for making available the early records of Case I; to Dr. T. H. Steel and Dr. Ewen Downie for allowing us to investigate and report on patients under their care (Cases II and III respectively); to Dr. H. Luke for the radiographic studies; to the late Mr. R. Officer and to Mr. K. N. Morris for their collaboration and surgical management of the patients; and to Dr. A. V. Jackson for his report on the pathology of the tumours. The photography is the work of Mr. T. O'Connor.

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RADIOGRAPHIC DEMONSTRATION OF UTERINE DEVELOPMENTAL ABNORMALITY AS A CAUSE OF ABNORMAL LIE OF THE FŒTUS.

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REPORT is here made of the ante-partum recognition by radiography of a minor degree of uterine developmental abnormality determining a persistent abnormality of fœtal lie.

CASE I.—The first patient investigated was an Australian woman, aged 30 years, in the thirty-ninth week of her third pregnancy. She had miscarried at six weeks in August, 1956, and at four months in April, 1957. Antenatal examination had revealed an unstable transverse lie of the fœtus, which at the date of admission, February 10, 1958, could not be corrected. Radiographic examination was requested on February 11 in the hope of elucidating the cause of the persistent transverse lie, and it was then recognized that the uterus was of abnormal form, its usual fundal convexity being replaced by a concavity, suggesting the possibility of a uterine abnormality (Figure I).

A lower uterine segment Cæsarean section was performed on February 17, and a vigorous, mature, male infant of 6 lb. 12 oz. was delivered by the breech. The abnormal uterine contour was confirmed, and a wide, fleshy septum was displayed, extending vertically in the mid-line halfway down the uterine cavity. The clinician considered this to be a subseptate uterus (Figure II).

CASE II.—The second patient was a Dutch woman, aged 31 years, in the thirty-eighth week of her third pregnancy. She had delivered spontaneously a still-born infant of thirty weeks' gestation weighing 4 lb. 7 oz. in June, 1956, having been admitted to hospital in strong labour with the breech on view. She had had recurrent bleeding and drainage of blood-stained liquor throughout the pregnancy. The child had a bilateral talipes, and oligohydramnios was considered as a possible cause. In November, 1956, the patient miscarried at three months.

Her latest admission to hospital was on February 9, 1958. The fœtus was in transverse lie with the head to the right. The fœtal heart was heard in the mid-line. Attempted version under general anæsthesia on February 10 was unsuccessful, and radiographic examination was requested to exclude fœtal or uterine abnormality. This showed the fœtus to be in a deviated breech presentation, with the sacrum to the right. The uterus was seen to be of unusual

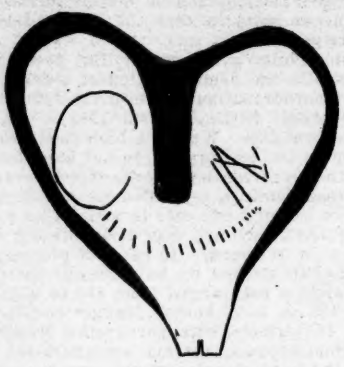

FIGURE II.
Diagram of subseptate uterus (Case I).

contour, its upper margin being arcuate and its right side larger than the left, such as to suggest a uterine abnormality. There was no fœtal abnormality seen (Dr. A. A. Merritt) (Figure III).

Radiographic examination had been made on January 30, prior to her admission to hospital, when an abnormal fœtal attitude and lie had been described, but the abnormal uterine contour, though displayed, was not observed.

A lower uterine Cæsarean section was performed on February 26, and a live female child of 6 lb. 15 oz. was delivered. The abnormality of the external contour of

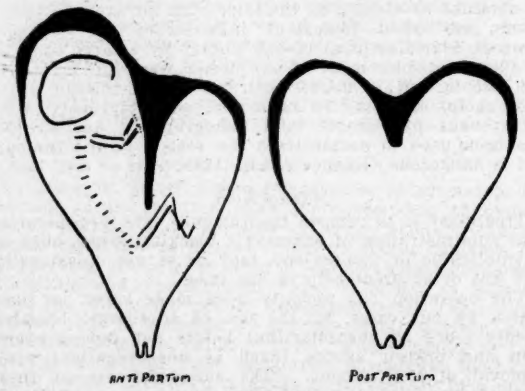

FIGURE IV.
Diagram of bicornuate and subseptate uterus (Case II).

the uterus was confirmed, and a septum extending halfway down the uterine cavity was felt. Its caudal portion was broken down with the finger after delivery of the placenta. The clinician considered the uterus to be bicornuate and subseptate (Figure IV).

Discussion.

The uterus is formed by fusion of the Müllerian ducts. Way (1945) suggests that congenital deformities of the uterus may arise in three different fashions—failure of fusion, persistence of the medial walls and failure of

development. Minimal failure of fusion results in the uterus arcuatus, where there is a notch in the top of the fundus which does not extend through the whole thickness of the myometrium, and thus does not alter the conformity of the uterine cavity. A greater, but still minor, degree of failure of fusion will result in the uterus bicornis unicorpus unicollis. The uterus subseptus shows no deformity of external contour, but a septum varying in length according to the degree of resorption of the fused medial walls of the Müllerian ducts.

The uterus of the first patient undoubtedly conforms to Way's uterus bicornis unicorpus unicollis, while that of the second patient appears to have features common both to this and to the subseptate uterus, as it is difficult to conceive that the full thickness myometrial invagination of the uterus bicornis unicorpus unicollis could be broken down with the finger.

It is submitted that where clinical examination has failed to reveal the cause of a persistent transverse lie of a fœtus, a single radiographic exposure of the abdomen may demonstrate the presence of a uterine abnormality and suggest its nature.

Acknowledgements.

I wish to thank Dr. J. Lindsay Taylor and Dr. G. J. Hall for permission to report the clinical details of their patients, and Sister H. Nelson for her competent radiography and observation.

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THE STOMACH IN AN INGUINAL HERNIA.

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THE stomach is only very rarely found in an inguinal hernia, and the following case is therefore thought worthy of record.

Clinical Record.

The patient, a male aged 75 years, had had an inguinal hernia for many years, which had become larger over the last 10 years, but which to some extent had been controlled by a truss. The hernia did not cause pain, nor was there any constipation. His present complaint was of dysphagia and upper abdominal discomfort. He had not lost any weight recently, his appetite was adequate and he was reasonably active for his age.

On examination he was seen to be a small thin man, who looked his 75 years. A large left inguinal hernia hung down between his thighs to a point a little more than half way down his femora. The hernia was soft and painless, but of course was not capable of reduction.

On barium meal X-ray examination, the greater part of the stomach was seen to be within the hernial sac, the body of the stomach being the portion most involved, whilst the greater curve was the lowest part (Figure I). The fundus was elongated and flattened, and was obviously doing duty merely as an extension of the œsophagus to convey food to the body of the stomach within the sac. There was no evidence of ulcer or neoplasm in the stomach, the gastric folds were within normal limits and the pylorus was of normal calibre. The duodenum was elongated, but was within normal limits. The small bowel was also normal, although many jejunal and ileal coils were within the hernia. The patient was reexamined at the end of four hours, when the stomach was completely empty and the barium meal was largely within the colon, the transverse portion of which was completely within the sac (Figure II). At the end of 24 hours only small clumps of barium remained scattered through the colon, the main mass of the meal having been passed.

Discussion.

A large inguinal hernia is one of the most obvious of pathological entities, but the exact nature of its contents is impossible to determine clinically, and can be arrived at only by radiological examination, in which the presence of the stomach or of the small or large bowel can be easily demonstrated.

Despite the frequency with which barium meal X-ray examinations are carried out on patients who may have inguinal hernias, even though, as in this case, their symptoms are not associated with the hernia, the finding of the stomach within the sac is a very rare event.

Davey and Strange (1954) reported one case of gastric content of an inguinal sac and one case in which the sac was a femoral one. In a review of the literature they found only 34 cases associated with inguinal hernia, of which only five were in the English language, the first case having been published in 1802 by Lallement. I have been unable to discover any further reports of cases up to the present date. Most of the early cases reported were discovered at autopsy, whilst the greater number of more recent cases were discovered after operation for strangulated hernia. However, Rieder, in 1915, diagnosed by radiographic examination the presence of the stomach in a left inguinal hernia.

A point of some importance in the case reported above is that the stomach was empty in four hours and functioned quite normally, which indicates that a low position of the viscus is not necessarily associated with atony.

Summary.

A case of inguinal hernia is reported, in which the contents included the stomach and the small and large bowel. The rarity of the stomach as a content of an inguinal hernia is noted.

Acknowledgement.

This patient was under the care of Dr. Patteson Armytage, whom I thank for his assistance.

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Reviews.

Treatment of Cancer and Allied Diseases. Volume I: "Principles of Treatment", by fifty-five authors, edited by George T. Pack, M.D., F.A.C.S., and Irving M. Ariel, M.D., F.A.C.S. Second Edition; 1958. New York: Paul B. Hoeber, Incorporated. 10" × 6¾", pp. 664, with 505 illustrations. Price: $22.50.

THERE is little doubt that this ambitious and authoritative work, planned to include nine volumes by 55 authors, will be the most comprehensive compendium on the therapy of cancer for many years to come.

The first volume covers industrial cancer, tumour clinics, tumour detection, home care of cancer patients and the recording of results of therapy. The section on diagnostic cytology and histopathology contains chapters by Broders, Papanicolaou and Stout—an illustrious galaxy. An informative section on the basic principles of the surgery of cancer deals with a wide range of surgical subjects, from anæsthetic assessments, post-operative resuscitation and electrolyte therapy and electrosurgery to a detailed account of modern vascular surgery. Various authors have cooperated to cover the field of radiotherapy, radioisotopes, chemotherapy and hormone therapy.

The work is produced in the finest American tradition, and is highly legible and well illustrated. Errors in the text were rarely noted; but on page 160 "androsterone" should surely read "aldosterone".

Some general practitioners may find the aggressive attitude of modern American surgery in the treatment of cancer somewhat unreal, and will be unable to accept the suggestion that terminal cancer differs in no wise from diabetes or vascular disease. The two last-mentioned are not commonly associated in the lay and nursing minds

with colostomy and urinary bags, or with relentless and soul-destroying pain, which has required the elaboration of a new branch of surgery—the relief of pain in malignant disease.

Like all compendia by many authors, the target is not always reached, and the work may prove too elaborate for the beginner or too elementary for the advanced oncologist. These remarks may possibly apply to the sections on arterial surgery (hæmorrhage) and irradiation. Wisely, the authors are pragmatic, and have not concerned themselves with the cause of human cancer. It is for this reason that the only reference to this subject is industrial, and rightly deals with one of the great medical victories of modern times—the prevention of occupational cancer.

The medical profession should welcome this new edition of a most valuable contribution from the pens of a modern medical constellation.

Ultramicro Methods: For Clinical Laboratories. By Edwin M. Knight, jnr., M.D., Roderick P. MacDonald, Ph.D., and Jaan Ploompuu; 1957. New York, London: Grune and Stratton. 8¼" × 5¼", pp. 136, with 18 illustrations. Price: $4.75.

THE use of ultramicro analytical methods offers one solution to the problems created by the demand for more and more laboratory tests on each individual patient. These methods are rapid, accurate and economical as regards blood-samples, reagents and laboratory space. They do, however, require special equipment and greater skill and care for their performance.

The contents of this book include chapters on the setting-up of ultramicro chemical investigations, special equipment, the collection of blood and pipetting, and virtually all the common clinical biochemical estimations, as well as the C-reactive protein test, microflocculation tests for syphilis, and micro hæmatocrits. Each estimation is discussed clearly and systematically. The appendix contains tabulated normal values, and also a useful directory of distributors and producers. The index is small but adequate. References are given at the end of each chapter, and are identified by numbers in the text.

The book is written in a concise, pleasant style. A number of different but harmonious types are used to emphasize paragraphs and important words, and this arrangement, together with good spacing, makes reading and reference easy. The printing is clear and the illustrations are meaningful.

Several typographical errors were noticed. Except for that on page 92 they are trivial. One or two passages could be better stated—e.g., the explanation on page 98 of the method of determining protein fractions by summing optical densities. The times given on page 114 for the usability of the antigen are contradictory, and this could have serious consequences.

In summary, we can say that there is not much which can be criticized, and that this excellent little book certainly will become a standard manual in clinical laboratories undertaking ultramicro analysis.

Discussions on Child Development. Edited by J. M. Tanner, M.D., D.Sc., D.P.M., and Bärbel Inhelder; Volume III; 1958. Victoria: Melbourne University Press. London: Tavistock Publications, Limited. 8¼" × 5¼", pp. 224, with illustrations. Price: 46s. 6d.

THIS is the report of the third meeting of a group convened by the World Health Organization to discuss aspects of child development. The topics selected are different for each meeting. On the present occasion those discussed were: the ways in which young children in some societies learn the male and female roles; sex differences in play construction of twelve year old children; the syndrome of identity diffusion in adolescents and young adults; the psychosexual development of children.

One of the interesting features of this group is the wide diversity of interests and experience of the members, which include famous child psychologists like Piaget, Inhelder and Zaggo, a cultural anthropologist, Margaret Mead, psychiatrists Bowlby and Hargreaves—biologists like Tanner and Grey Walters, the ecologist, Lorenz ("King Solomon's Ring"), and Erikson (an analyst).

Because the discussion followed the pattern of similar meetings financed by the Josiah Macy Foundation, it is somewhat difficult to follow. Interruption of the speaker is permitted (in fact encouraged) at all stages of the meeting. Thus it is not easy to maintain continuity, and the reader could become irritated by the style of reporting.

Margaret Mead made the major contribution to the discussion of the development of sex roles, drawing upon her vast personal experience and the cross index at the American Museum of National History. Anyone interested in this aspect of child development, especially on a cross-cultural basis, would find this section interesting and informative. The group made a definite attempt to seek material which might help in the elucidation of some of the problems of homosexuality.

Sex differences in play construction of twelve year old children was almost exclusively a report by Erik Erikson of studies he had made years earlier in California. Children were invited to construct an exiting scene with toys on a table. The toys selected and their arrangements were "read" by the tester, and it was possible to predict some aspects of personality from the type of scene constructed—there were distinct male and female types of scenes.

In the section on identity diffusion, Erikson made the point that it is necessary for each adolescent to have a close older friend, like an uncle or neighbour, to whom he is important as a means of helping him find himself as an individual. When for a variety of reasons this relationship does not happen, then identity diffusion occurs; this can reveal itself either as a psychosomatic disturbance or as deviant behaviour.

This is a reference book for the advanced student of child development, and for those interested in cross-cultural differences in child rearing and child development.

An Introduction to Pathology. By G. Payling Wright, D.M., F.R.C.P.; Third Edition; 1958. London, New York and Toronto: Longmans Green and Company. 8¼" × 5¼", pp. 672, with many illustrations. Price: 68s.

THIS book, now appearing in its third edition, is based on the author's undergraduate teaching course, and intended mainly for students who are about to enter the clinical part of their training; but it should also prove very useful to graduates who are preparing for examinations for higher degrees. It is an extremely well-written book, scholarly and most readable. In his new preface the author makes a plea for the inclusion of general pathology in the preclinical years. He writes:

> It is now generally accepted by medical educators that the student's study of the preclinical sciences should be designed with two purposes in view; first, to provide a training in the methodological collection of evidence and the drawing of warrantable inferences from it, and second, to carry out this education by making use of selected facts and theories that will of themselves prove of value in the later and more applied portion of professional training . . . There has been insufficient appreciation of the contribution that general pathology can make in this dual programme of education and vocational training.

Pathology should be taught, not merely as a collection of useful information, but as a scientific discipline which can "supply the student with confidence in a method of thought at a critical time in his career, when he is tempted by the very vastness of the mass of factual knowledge confronting him to abandon scientific principles and adopt a frankly empirical attitude in their place". The book is thus written from an essentially dynamic point of view. The discussion of each topic moves from its historical background, through the centuries, to the intricate, clearly described precision of modern science. There are 263 small illustrations in black and white, interpolated in the appropriate places in the text, as well as a number of figures and tables. The photomicrographs are of very good quality. The present edition should maintain the popularity of this well-known text-book.

Breast Cancer: The Second Biennial Louisiana Cancer Conference, New Orleans, January 22-23, 1958. Edited by Albert Segaloff, M.D.; 1958. St. Louis: The C. B. Mosby Company. Melbourne: W. Ramsay (Surgical) Limited. 9¾" × 6¼", pp. 260, with 31 tables and 42 illustrations. Price: £2 15s.

THE publication of symposia with panel discussions is a recent and welcome innovation in medical literature. This publication presents the papers read at the American Cancer Society's biennial conference, and is edited by Dr. A. Segaloff of New Orleans. Each of the 21 papers is presented by an invited speaker, who is a recognized authority on his subject in the United States. The reports cover the more controversial clinical facets of the problems recently brought to the fore in breast cancer therapy. The role of radiation therapy, extended radical mastectomy, castration and hormone therapy are discussed after a

preliminary section on the pathology and cytology of breast cancer.

The most attractive and valuable feature, in our opinion, is the panel discussion following each section of presented papers. Differences of opinion are outspoken and echo the questions raised by the papers in the mind of the reader. If criticism can be made, it is that the panel discussion is quoted verbatim without being edited. The purpose of the editor was certainly to preserve spontaneity; but phrases such as "If the operator could find the last lantern slide, I will appreciate it" (page 130) do nothing to enlighten the reader.

An interesting section presented by Gordon and Segaloff is that on the prophylactic use of castration at mastectomy. Its insurance against further pregnancies does not appear to be of great significance since, in Stage I cases at least, later pregnancy appears to have little effect on the prognosis. However, several bodies of statistics suggest an increase of 10% to 15% of five-year survivals in Stage I, and of 30% to 35% in Stage II, by the use of either surgical or X-ray castration as a prophylactic measure.

This is an excellent work, with a freshness of presentation that should appeal to every surgeon, pathologist, radiotherapist or endocrinologist engaged in the handling of patients with breast cancer. In addition, its cost is relatively low for a work of such high quality.

Outline of Fractures: Including Joint Injuries. By John Crawford Adams, M.D., F.R.C.S.; Second Edition; 1958. Edinburgh and London: E. and S. Livingstone, Limited. 8¾" × 5½", pp. 276, with 237 illustrations. Price: 27s. 6d. (English).

A FURTHER edition of this small book is welcome. The teaching is dogmatic and well set out; the opinions, for the most part, are those generally accepted.

It would be quibbling to enter into a dispute as to the best method of fixation in complete dislocation of the acromio-clavicular joint; the important point is made in advocating early operation. Likewise, many would prefer to fix a transverse fracture of the patella by some means other than the insertion of a vertical screw.

The illustrations are well chosen, and the X-ray pictures are mostly good. However, it would be preferable to delete that ankle X-ray film which shows the screw in the medial malleolus running across the joint.

In short, this is a small book which provides first-rate instruction for the senior medical student.

A Manual of Reflection Oximetry and Some Other Applications of Reflection Photometry. By W. G. Zijlstra, M.D.; 1957. Netherlands: Van Gorcum's Medical Library Nr 152. 9¾" × 6", pp. 134, with 86 illustrations. Price: Hfl. 17.50, U.S. $4.75.

THIS little manual serves as a guide to the use of the "cyclops" reflection oximeter developed in Holland by Brinkman and co-workers. The book deals succinctly with the differences between transmission and reflection oximetry, and is particularly useful to workers employing the latter technique. The empirical validation of the method is carefully documented and emphasis is laid on the care required to establish oximetry as a useful clinical adjunct. In-vivo reflection oximetry offers some slight advantages compared to transmission ear-piece oximetry. Although reflection oximeters have also been used in conjunction with arterial cuvettes, the method seems to offer no advantage compared to the Wood-type transmission cuvette. From the point of view of quantitative work with indicator dilution curves, the latter instrument seems preferable.

Practical Blood Grouping. By F. Stratton, M.D., D.Sc., D.P.H., and P. H. Renton, M.D., B.Sc.; 1958. Oxford: Blackwell Scientific Publications. 8¾" × 5½", pp. 356, with many illustrations. Price: 42s. (English).

As is indicated by its title, the chief emphasis in this book is on the practical aspects of blood grouping. All tests commonly used in blood-group serology are described fully. The techniques presented are sound. From their wide practical experience the authors have included a wealth of helpful practical detail, and there are valuable discussions of the causes of false results. One minor criticism is that, while no objection can be made to the authors' preference for tube techniques, the vigorous way they decry the use of tiles even for mass A B O typing is rather carrying this preference to an extreme.

The essentially practical purpose of the book has not led to neglect of the theoretical aspects of blood-group serology, which are presented with more than adequate detail, but with praiseworthy conciseness. Most recent discoveries of importance are included. The first chapter, on the general features of antigen-antibody reactions, is particularly lucid. Throughout the book informative tables of blood-group antigens and antibodies add considerably to the clarity of presentation. The tabulation of phenotype frequencies and other quantitative data gives ready reference to information which is often needed in blood-group work. Many instructive case reports are included in the book. Naturally, most space is given to the two most important blood-group systems, the A B O and Rh systems, but adequate attention is given to the less important systems. In discussing the controversial question of Rh nomenclature, the authors have taken a middle course. While admitting that Wiener's theory of multiple alleles might express the actual state of affairs more correctly than the Fisher-Race theory of linked genes, they consider that it is of little practical consequence which nomenclature is used, and, for convenience, use the Fisher-Race nomenclature.

In recent months, a number of excellent books have appeared by well-known authors on various aspects of blood grouping. The book under review more than holds its own in this company and is a valuable addition to any serologist's library.

The Care of the Geriatric Patient. Edited by E. V. Cowdry, Ph.D., Sc.D. (Hon.); 1958. St. Louis: The C. V. Mosby Company. Melbourne: W. Ramsay (Surgical), Limited. 7¾" × 4½", pp. 440. Price: £4 8s.

UNDER the editorship of E. V. Cowdry, world-renowned for several decades for his work on the biology of aging, a panel of 21 eminent North American gerontologists and one Englishman have combined to produce a volume designed to cover all fields of clinical geriatrics. Subjects as diverse as genetic factors in aging and the statistics of nursing homes in the United States are included.

Inevitably the book is patchy. Some chapters are excellent, some frankly bad. There is much repetition which could have been avoided by more forceful editing, and there are some medical inaccuracies, such as the surprising statement that "The chronic diseases of old age are the psychosomatic or psychogenic diseases of youth" (Chapter 3). The index is very good for such a work, most of the chapters are easily read and the general appearance is attractive.

The large sections of the work devoted to the organization of social and medical care of old people, even though dealing only with the United States, are very good and the chapter contributed by E. M. Bluestone is one which should be obligatory reading for any person engaged in the organization of hospital care. Most of the comments about social conditions, though written for American readers, apply with equal force in this country. The chapters dealing with clinical problems cover their subject matter only in a superficial fashion, for the various authors have had space only for brief reviews of their subjects.

Dr. J. H. Sheldon completes the volume with a chapter headed "Geriatrics around the World", in which Australia is mentioned fairly; it is interesting to note that the home-care section of the Royal Newcastle Hospital receives two mentions.

This is not a text-book to be consulted by a clinician wishing to obtain information on how to deal with a clinical problem; but it is a very readable work which could, with advantage, be studied by anyone interested in social problems, and it would be especially valuable to those interested in planning geriatric services.

Clinical Obstetrics and Gynecology. Volume I, Number 3; "Symposium on Special Diagnostic Aids", edited by C. Paul Hodgkinson, M.D.; "Symposium on Abnormal Uterine Bleeding", edited by John I. Brewer, M.D. September, 1958. New York: Paul B. Hoeber, Incorporated. 9¼" × 5¾", pp. 303, with illustrations. Price: $18 per year (four issues).

THE third number of this quarterly series maintains the excellence of the previous two. The symposium on special diagnostic aids, occupying about two-thirds of the book, was edited by C. Paul Hodgkinson, of the Henry Ford Hospital, Detroit, and that on abnormal uterine bleeding by Professor John Brewer, of Chicago.

S. B. Gusberg, well known for his interest in early genital cancer, writes on the developmental stages of uterine cancer and their diagnostic appraisal, discussing both histopathology and the many modern techniques of cancer detection.

The practical value of exfoliative cytology is discussed by a group from Duke University, who point out the similar incidence of stage O cancer in pregnant and non-pregnant patients. This is also stressed in a paper by

Peckham and Chung, who deplore the tendency of some pathologists to ascribe to pregnancy changes which are in fact persistent, including pre-invasive cancer.

There are informative chapters on culdocentesis, gynograms, cystometry, placentography and hysterosalpingography. Albert Decker quotes a large series of culdoscopic examinations, and shows the practical value of this method of diagnosis.

Davis and Hunt give a well-balanced account of the Röntgen evaluation of pelvic dystocia, presenting a simple method of classifying varying degrees of pelvic contraction.

Hodgkinson, Doub and Kelly describe an excellent method of taking urethrocystograms using a metal bead chain technique.

Urdan and Kurzon, of Milwaukee, Wisconsin, contribute an interesting paper on the use of the crystallization-cellularity phenomenon of cervical mucus. The "fern test" is a simple investigation of ovulation, and takes only a few minutes to perform.

Duncan Reid and Charles Roby, of the Boston Lying-In Hospital, describe the clot observation test for hypofibrinogenæmia, and the clinical conditions calling for its performance.

After a foreword by Brewer, in the second symposium Stuart Abel writes the longest chapter, a complete survey of all abnormal genital bleeding occurring in the menstrual years.

Brewer and McCune concentrate on the causes, diagnosis and treatment of abnormal climacteric bleeding. Tommy Evans, of Ann Arbor, contributes a similar chapter on post-menstrual bleeding, and states that nearly 50% of all patients admitted to hospital for this symptom have genital malignant disease.

Professor Willard Allen gently points out the confused thinking that exists concerning functional bleeding, and stresses the need for rational therapy based on an understanding of the disordered ovarian physiology. He states that œstrogen therapy for prolonged functional bleeding arose out of the inexpensiveness of stilbœstrol, and that it ought to be replaced by the original and rational progesterone therapy now that the latter is becoming more easily obtainable.

There is a cumulative index in each number of this series. In all there are 46 contributors to this number, which covers a wide field in a most up-to-date and authoritative manner.

A Bibliography of Internal Medicine: Communicable Diseases. By Arthur L. Bloomfield, M.D.; 1958. Illinois: The University of Chicago Press. 9¼" × 6", pp. 568. Price: $10.00.

THE title of this book is likely to give quite a wrong impression of the contents. Instead of its being just a dull list of references, as one would expect, we find that Dr. Bloomfield has compiled a fascinating history of some 30 communicable diseases, by selecting excerpts from the literature published over the last 150 years. These excerpts, as well as being carefully selected, are commendably brief.

The arrangement of the extracts in chronological order makes what otherwise might be heavy reading, an exciting experience. If the book is read slowly, disease by disease, the reader will find it interesting to see how the old physician with only his native intelligence to guide him observed, sifted facts, formed theories, argued with his confrères.

Starting almost from "scratch", the authors had to deal with diseases whose causes, and therefore mode of spread, were unknown. They could only record their observations and clinical findings. Knowledge slowly grew as writer after writer added his experiences to the previous recorded ones.

The influence of the discoveries of Pasteur in the ultimate elucidation of many of these diseases is plainly shown. In the absence of the knowledge that infectious disease was caused by living organisms, the problems of spread of infection must have appeared almost insoluble. Yet it is remarkable how close some early writers got to the correct answer, only to be led astray by some false clues. In many ways, the search for the correct explanation reads like a detective novel.

The research work carried out by Dr. Bloomfield in compiling his excerpts must have been tremendous, and one can have nothing but praise for the way in which he has carried out his task. In a book such as this, there must be differences of opinions as to the relative importance of certain discoveries. It is no detraction from the merit of the book to feel a trifle disappointed that the last reference in the case of poliomyelitis is Landsteiner's work on experimental transmission in 1909. Perhaps in a later edition Dr. Bloomfield may complete the exciting story of poliomyelitis over the last 50 years.

Books Received.

[The mention of a book in this column does not imply that no review will appear in a subsequent issue.]

"Protides of the Biological Fluids: Proceedings of the Sixth Colloquium, Bruges, 1958", edited by H. Peeters; 1959. Amsterdam, London, New York and Princeton: Elsevier Publishing Company. London: D. van Nostrand Company, Limited. 9¼" × 6¾", pp. 342, with many illustrations. Price: 45s. (English).

The papers are in English, French or German, but there is a summary in English in every case.

"Studies on Iron-Dextran Complex", by Tord Karlefors and Åke Nordén, *Acta Medica Scandinavica*, Supplement 342; 1958. 9¼" × 6¾", pp. 54, with illustrations.

From the Department of Internal Medicine, University of Lund, Sweden.

"Notes on Injections for Nurses", by T. H. White, M.B., Ch.B., D.T.M. and H.; 1959. Bristol: John Wright & Sons, Limited. 7¼" × 4¾", pp. 32, with illustrations. Price: 2s. 6d.

Notes on "techniques that nurses and hospital assistants may be expected to carry out".

"Hypertension and Coronary Heart Disease: Classification and Criteria for Epidemiological Studies", First Report of the Expert Committee on Cardiovascular Diseases and Hypertension. World Health Organization Technical Report Series, No. 168; 1959. Geneva: World Health Organization. 9¼" × 6¼", pp. 28. Price: 1s. 9d.

The report of a committee which met in October, 1958.

"Électromyographie dans les Maladies Nerveuses et dans la Cryptotétanie: Atlas D'Électromyographie", by *N. Rosselle et alii; 1958.* Louvain: Editions Nauwelaerts. 9¼" × 6¼", pp. 159, with 183 illustrations. Price: FB 150 (paper covers), FB 200 (board covers).

From the Laboratory of Electromyography, Catholic University of Louvain.

"Expert Committee on Auxiliary Dental Personnel", Report; World Health Organization Technical Report Series, 163; 1959. *Geneva: World Health Organization.* 9¼" × 6¼", pp. 32. Price: 1s. 9d.

The report of a committee which met in June and July, *1958.*

"Public Health Nursing", Fourth Report of the Expert Committee on Nursing; World Health Organization Technical Report Series, No. 167; 1959. Geneva: World Health Organization. 9¼" × 6¼", pp. 32. Price: *1s. 9d.*

The report of a committee which met in October, 1958.

"The Foreign Student and Post-Graduate Public Health Courses", Sixth Report of the Expert Committee on Professional and Technical Education of Medical and Auxiliary Personnel; World Health Organization Technical Report Series, No. 159; 1959. Geneva: World Health Organization. 9¼" × 6¼", pp. 24. Price: 1s. 9d.

The report of a committee which met in July, 1958.

"Etiologia E Sistematica Delle Epatiti Da Virus", by A. Berengo; First Edition; 1957. Pisa: Omnia Medica. 9¼" × 6¼", pp. 234. Price: not stated.

A treatise on viral hepatitis from the University of Modena. It is entirely in Italian.

"Time-Dose Relationship and Morphology of Delayed Radiation Lesions of the Brain in Rabbits", by Nils O. Berg and Martin Lindgren. *Acta Radiologica*, Supplement 167. Stockholm: Acta Radiologica. 9¼" × 7", pp. 118, with 72 illustrations and 18 tables. Price: Sw.Kr. 30.

From the Departments of Radiotherapy, Pathology and Radiophysics, University Hospital, Lund, Sweden.

The Medical Journal of Australia

SATURDAY, SEPTEMBER 19, 1959.

ASIAN-PACIFIC CONGRESS OF CARDIOLOGY, MELBOURNE, 1960.

NEXT year an event of considerable medical and scientific significance is to be held in Melbourne from May 30 to June 3. This is the second Asian-Pacific Congress of Cardiology. The hosts for this congress are the members of the Cardiac Society of Australia and New Zealand, delegations will be coming from all the constituent societies of the Asian-Pacific region, and visitors are expected from all parts of the world. The congress will provide an opportunity for a concrete demonstration of goodwill towards our Asian neighbours and an opportunity for personal contact to extend our mutual understanding of one another. Attendance is open to any member of the medical profession and to any non-medical scientist working in the field of cardiology. The congress organizing committee intends that the scientific programme will cover all aspects of cardiology, including amongst others medicine, surgery, pædiatrics, pathology, radiology, physiology, biochemistry, pharmacology, public health, rehabilitation and other social aspects. In addition a scientific exhibition and a trade exhibition will be held. A social programme for wives of congress members is also being arranged.

Public interest in problems of cardiology in this community is rapidly being awakened, as is evidenced by the recent formation of the National Heart Foundation of Australia, and congresses such as the Asian-Pacific Congress of Cardiology provide a forum for the exchange of views and the stimulation of research work in all fields. It may be noted that cardiologists have in recent years created a world-wide organization which has as its focal point the International Society of Cardiology, holding congresses every four years. In addition there are three regional societies of cardiology, Inter-American, European and Asian-Pacific, each of which also holds a congress every four years. The Asian-Pacific Society was formed at its first congress in Manila in 1956 by delegates from the societies of Australia and New Zealand, India, Japan, Pakistan and the Philippines. As no scientific session was held at that meeting, the congress in Melbourne will be the first full congress in the Asian-Pacific region. Each of the regional societies is composed of a large number of national societies, and the Asian-Pacific Society, whose boundaries run from the eastern Mediterranean shores to the centre of the Pacific Ocean, includes at present the societies of Australia and New Zealand, India, Indonesia, Iran, Israel, Japan, Pakistan and the Philippines.

It should be unnecessary to draw the attention of Australians and New Zealanders to the fact that, as these congresses are held only every four years, it will be a long time before another is likely to be held in our countries, or to the fact that a large attendance is anticipated. The congress has been timed to follow immediately after the annual meeting of The Royal Australasian College of Physicians in Melbourne in May, 1960. As accommodation may be limited, early advance registration is urged. Offers of scientific papers and of exhibits for the scientific exhibition will be received until December 1, 1959. Application forms for registration, accommodation and submission of scientific papers or exhibits have been sent to many interested people. They may be obtained from the Honorary Secretary of the Organizing Committee, to whom they should be returned with congress fees. The office bearers of the Asian-Pacific Society are at present: *President*, Antonio M. Samia (Manila), *Vice-Presidents*, J. Kempson Maddox (Sydney), Magojiro Maekawa (Kyoto); *Secretary-General*, S. Padmavati (New Delhi); *Treasurer*, Roeinton B. Khambatta (Karachi).

The President of the Second Asian-Pacific Congress, we are pleased to note, is Dr. T. E. Lowe, of Melbourne. Any requests for information, and all application forms should be addressed to Dr. Austin E. Doyle, Honorary Secretary, Organizing Committee, Second Asian-Pacific Congress of Cardiology, Alfred Hospital, Prahran, S.1, Victoria.

THE BONDING OF FRACTURES BY PLASTIC ADHESIVES.

IN the 1958 Edward Stirling Lectures, B. K. Rank, referring to popular misconceptions of the nature of plastic surgery, remarked "We live in the age of plastic". Plastic materials now serve us at every turn of our daily lives. In medicine we use plastic tubes of many kinds, disposable plastic transfusion sets, and plastic in many other forms. An ingenious new technique, worked out at the Prince of Wales Division of the Sydney Hospital by Bernard Bloch, has now added to this list the use of plastic for the internal fixation of fractures. This highly original approach to an old problem received considerable prominence in the daily Press about a year ago, when the technique was still in an early stage of development. Bloch's preliminary report on his investigations appeared last November,[1] but we understand that considerable developments in the technique have taken place since then. In this first report he states that, two years previously, he had begun experiments into the bonding of fractures by amine-cured ethoxyline resins (substances used extensively in industry for casting and for the bonding of metal and other surfaces), the first experiments having been carried out on sheep. The results were so encouraging that in 1958 the technique was applied to fractures in humans. After a discussion on the principles and technique involved, the results of animal experiments are described. The application of the method to fractures in man is then discussed, and two case reports are presented. The first patient was an old woman from a mental hospital, who had sustained an oblique fracture of the shaft of the humerus three months earlier, which had failed to unite. Internal fixation with

[1] *J. Bone Jt. Surg.* (1958), 40: 804 (November).

ethoxyline resin, reinforced by an intramedullary polyethylene plug, was carried out, and the limb was supported in an abduction splint for two days. All was proceeding well when, two weeks later, the patient again broke the same humerus. Owing to her mental state it was not possible to find out how the fracture had occurred, but at a second operation it was found that the fragments of the first fracture were in good position, the second having occurred through previously intact bone. The plastic join was therefore extended to include the second fracture, and subsequent progress was satisfactory. The second patient was a young male epileptic who had sustained a fracture of his right tibia and fibula eight months previously; the fracture had been plated, but had failed to unite, and at operation a pseudarthrosis was found. The fracture surfaces were freshened up, an intramedullary plug was inserted, and a plastic bond placed externally. A plaster was applied for two days. Convalescence was delayed by the appearance of an area of skin necrosis, but the patient was able to walk a few steps without pain four days after operation, and a month later was walking freely, with full weight bearing.

In these early repairs Bloch used fibre-glass reinforcement in the bonding material, and the join was further strengthened by the insertion of an intramedullary plug. However, he informs us that he has since abandoned both these reinforcing devices and considers that a fault in the early trials was in making the join too strong, thereby impairing the resilience of the bone as a whole. He now uses a prefabricated resin splint, which is bonded to the bone at the time of the operation. In his preliminary report Bloch points out that none of the resin need be placed between the surfaces of the fracture, the bone being held in position by an external adhesive collar. Animal experiments suggest that it does not matter if some resin is interposed between the bone surfaces, as the resin may become incorporated in the bone. Callus formation is not interfered with, and there has been no evidence of toxic reaction to the presence of resin in the tissues.

It is evident that if the success of this method is fully substantiated it will have important applications in some departments of fracture treatment. The prospect of early restoration of function appears particularly interesting. The technique may also be capable of application in other directions. Bloch's original experiments and the first use of the method for human patients concerned fractures in long bones. We understand that Bloch and his colleagues have now successfully used the same technique to join blood vessels in sheep. This intrusion of orthopædic into vascular surgery may be of mainly theoretical interest, at least until much further work has been done, but there are other more obvious uses to which these adhesive resins can be put. We are informed that the method has been successfully used in two cases to effect a spinal fusion in the cervical region, without any necessity for post-operative immobilization, and that it has been used in the oto-rhino-laryngological department in cases of rhinoplasty, to glue the graft in position.

The development of this technique illustrates very well the collaboration between unrelated disciplines which is so often necessary to achieve sound results in modern research, and Bloch is anxious to pay tribute both to his orthopædic colleague, J. M. Ellis, who has latterly been closely associated with him in this work, and to the assistance he has received from Dr. Frank Connors, of the Plastic Research Laboratories, and others in the University of New South Wales. It has not been only a matter of inventing a new surgical technique; they have had to start from the bottom and develop the materials and apparatus to be used. Like others before him, Bloch has also found that in pioneering a new field basic questions arise to which no answers are readily available; this in turn leads on to new lines of research, so that it is impossible to foresee the ultimate repercussions of a new idea. We look forward to seeing in due course a full account of this interesting and stimulating research.

Current Comment.

SYMPTOMS-IN-THE-SLOT MACHINES.

SYMPTOMS-IN-THE-SLOT MACHINES appear to be just around the corner: in go the symptoms, out comes the clinical diagnosis—and, no doubt, a packet of appropriate pills. The prospect is startling, but it may not be so fantastic as it seems. Keeve Brodman and his colleagues[1] have demonstrated that a conventional high-speed electronic data-processing machine can be programmed "to make diagnostic decisions in a manner analogous to that of an unbiased physician". The first step was to feed into the machine the data obtained from 5929 consecutive adult patients admitted to the out-patient department of The New York Hospital. These data included the sex, age and "yes, no" answers given by each patient to a comprehensive medical *questionnaire*, as well as the final diagnosis made by the physicians after a thorough "workout". The 60 diseases most frequently diagnosed in both male and female patients in the hospital were selected for study. This was the only information given to the machine—sex, age, complaints and final diagnosis—and on this it was set to work to develop its own best methods for correlating the data and to store its information in its "memory". Thus it memorized syndromes. Now, when the sex, age and symptoms of a new patient are given to the machine, it rapidly compares this information with syndromes it has memorized, computes the likelihood of the patient's having any of the diseases about which it has been educated, and identifies the disease syndromes which the patient's symptoms most closely resemble. This is all done within one second.

How good is the machine? In a trial run against a physician on 350 patients, the machine made a correct diagnosis in 48% and the physician in 43% of non-psychoneurotic cases. With psychoneurotics the physician won hands down—81% against 42%. This apparently happened because the doctor had a good deal of extraneous experience which was not available to the machine. Of all the diagnoses made by the physician 2% were false, as were less than 5% of those made by the machine.

The machine method can, of course, be further improved by giving it additional information, such as comes from physical examination and from special laboratory testing, and also by increasing its range of diagnoses and the number of patients contributing to its memory of the features of each disease. In fact, there could be quite a big future for these machines. The cartoonist could play them to death. But even seriously they could be important as screening devices. Guardians of the "art of medicine" can keep calm, as Brodman and his colleagues point out that the machine does not think but can only follow instructions. A physician

[1] *Arch. intern. Med.*, 1959, 103: 776 (May).

who thinks, and thinks sensibly, may, by contemplating the same data and his past experiences, devise new methods of evaluation and achieve previously unknown conclusions of value. The machine, on the other hand, follows by rote the physician's instructions, thereby merely extending the physician's ability to remember, compare, compute and decide. But even this should not be scorned by Aesculapein followers, as the machine can be fed the very best information available, its memory is then infallible, its speed is incredible, its computations are uninfluenced by alimentary activity, and its decisions are unbiased—provided, of course, there are no short circuits.

A HAZARD OF HEXŒSTROL.

NOWADAYS the œstrogens are everywhere treated with wholesome respect. A further instance of the wisdom of this attitude comes in a short report from France. On February 12, 1959, Y. Vallin and M. Duperrat[1] communicated the following case history to the *Société française de Dermatologie*. The patient, a woman, aged 65 years, whose menopause had occurred 12 years previously, washed her hair once in a hexœstrol lotion that had been prescribed because of generalized falling of her hair. The lotion had a very high concentration of hexœstrol—1%. Only a few hours later marked congestion of the breasts was present, and the patient was in a state of severe sexual excitement, from which she was not relieved until a profuse uterine hæmorrhage occurred. However, the hæmorrhage recurred to such an extent that a curettage was performed, for both therapeutic and diagnostic reasons. Photomicrographs of the endometrium from the body of the uterus were compared with similar pictures from a normal subject of 65 years, and revealed extraordinary artificial hyperplasia of the uterine mucous membrane.

A CHINESE PHYSICIAN'S STORY.

A REMARKABLE, unorthodox and withal delightful book of memoirs has recently been written by a medical man of pure Chinese extraction,[2] who, although deeply imbued with pride in and affection for his ancient ancestral traditions, has with equal pride insisted on retaining his British nationality as a native of the island of Penang in the Malay Peninsula. After many years of distinguished public service under varied forms of Chinese government, at the ripe age of 80 years he set himself the arduous task of giving a full account of his stewardship, which makes a fascinating story as told in a weighty book of over 600 pages.

One of a large family brought up in an ideal Chinese home, Dr. Wu Lien-Teh received his early training and instruction in the rules of conduct and derived spiritual satisfaction from the teaching of Gautama Buddha, whose rational precepts of morality he continued to cherish for the rest of his life. In undergraduate days at Cambridge his Oriental philosophy was occasionally challenged by ardent religionists of other persuasions, but he was able to find adequate provision for his needs in the ancient religion of his fathers, as evidenced in the fulfilment of a life of devotion to his family, to his profession, to old friends the world over and to a constant ideal concerned with promoting the health, happiness and social welfare of the common people whatever their nationality.

An intriguing feature of this book of reminiscences is that it purports to be the autobiography of a Chinese physician, yet the greater part of it provides English-speaking people with a refreshing Oriental version of the history and factual implications of many social, political and medical developments which in the last half century have shaken the world, and South-East Asia in particular. Indeed, it is a story with which every enlightened Australian would be well advised to make himself familiar. Furthermore, instead of a sophisticated, complacent and comfortably cultured Occidental offering free and light-hearted opinions on curious Oriental customs or behaviour, we are a little shaken to find an intelligent Chinese scholar politely and tolerantly recording his own astute observations and comments on the European way of life and the previous efforts of foreign powers to impose their will upon China and its backward millions.

Dr. Wu first distinguished himself as a pupil of the Penang Free School, which was conducted by an English headmaster on traditional public school lines, and in 1896 he won a Queen's scholarship, which took him to Emmanuel College, Cambridge, to become a student of medicine. His cherished recollections of the friendship and innumerable kindnesses extended to him in difficult times by the British people and by many leaders in the European science and medicine of that day all make interesting reading, and recall to mind a number of fine personalities who have since achieved international fame. As an undergraduate he showed a decided leaning toward pathological and bacteriological research, which, after graduation, was continued at the Pasteur Institute in Paris under Roux and Metchnikoff; then at Halle in Germany under Professor Karl Fraenkel; and later at the Institute for Tropical Diseases at Liverpool, England. In 1903 he returned to Malaya with the degrees of master of arts and doctor of medicine from the University of Cambridge, and with a research scholarship from Emmanuel College which enabled him to work for a time at the Institute for Medical Research in Kuala Lumpur.

In the first four chapters of his book, Dr. Wu gives a detailed account of his commission from the Chinese government at Peking to direct a plan of campaign, in cooperation with the Russian and Japanese medical authorities, for dealing with a serious outbreak of pneumonic plague which began to spread through Northern Manchuria in the winter of 1910. The first visitation accounted for nearly 60,000 deaths before the situation could be brought under control; but the valuable research work undertaken and the novel experiences gained with the application of modern medical knowledge aroused wide interest, and brought about the first meeting of an International Plague Congress, which was held at Mukden in 1911 under the able guidance and chairmanship of Dr. Wu.

A more insidious and dangerous threat to health and social welfare in the Far East had been the inability of the Chinese to resist the vicious pleasures of an opium den, and powerful vested interests had consistently thwarted the efforts of leading British statesmen and influential Chinese nationals to have the illicit traffic suppressed. For the last 50 years Dr. Wu has been a moving spirit in the organization of local committees and world conferences called with the object of finding ways and means to deal with the menace effectively. His long chapter on every aspect of the "Narcotic Problem" is a mine of information on the subject, and paints a frightening picture of the evil influences of the drug habit in undermining the physical, mental and moral health of a community, to the accompaniment of a long trail of vice and crime.

In the space available it is impossible to touch more than superficially on all the varied highlights of this modern Chinese physician's entrancing story. His was a life packed with high adventure, useful service to humanity and exciting experiences in the official and private contacts he enjoyed with outstanding personalities of our age. As his instrument of communication he makes full use of a mastery of the English language, so that his thoughts are conveyed to us in lucid and immaculate prose.

[1] *Presse méd.*, 1959, 67:1109 (May 30).

[2] "Plague Fighter: The Autobiography of a Modern Chinese Physician", by Wu Lien-Teh, M.A., M.D. (Cantab.), Mast.P.H., Litt.D., Sc.D. (St. Johns, Shanghai), LL.D. (Hongkong), 1959. Cambridge: W. Heffer & Sons, Limited. 8¼" × 6", pp. 678, with illustrations. Price: 30s. (Abroad).

Abstracts from Medical Literature.

RADIOLOGY.

Œsophageal and Gastric Varices.

K. T. EVANS (*Brit. J. Radiol.*, April, 1959) discusses important factors in radiological technique for demonstrating œsophageal and gastric varices and describes their radiological appearances. Minimal œsophageal varices may be difficult to detect even with high quality radiographs. The earliest change that may be recognized consists of slight widening with minimal scalloping of the mucosal folds. In gross cases the œsophagus is frequently dilated. This is a valuable sign in young people and may be the first indication of the presence of varices. There is marked distortion of the mucosal pattern and globular or worm-like filling defects in the column of barium are seen. The varices frequently extend up the œsophagus to the level where the azygos vein enters the superior vena cava, but do not generally extend higher than this point. Most gastric varices are seen along the lesser curvature of the stomach near the cardia. Lobulated filling defects along the lesser curvature of the stomach will suggest the diagnosis, particularly if œsophageal varices are present. A filling defect of varying size may be present in the region of the cardia, encroaching on the normal gastric air bubble. The appearances may resemble a gastric neoplasm and venography may be necessary to differentiate the two conditions. Well-defined globular filling defects may be seen over the fundus of the stomach due to dilated collateral vessels formed as a result of extrahepatic portal obstruction. These collateral vessels pass from the spleen via the vasa brevia and course over the fundus of the stomach.

The Systematic Use of Tomography in the Diagnosis of Carcinoma of the Paranasal Sinuses.

G. D. DODD *et alii* (*Radiology*, March, 1959) state that the radiological diagnosis of primary or secondary malignant cancer of the paranasal sinuses depends upon the demonstration of bone destruction. Bone production, opacification of the chamber, or intraluminal mass are not in themselves specific and cannot be relied upon. Experiences with 191 patients suffering from primary or secondary malignant growths of the paranasal sinuses have led the authors to place great dependence upon tomographic studies in the diagnosis and management of these lesions. While the conventional sinus projections suffice for diagnostic purposes in typical advanced cases, minimal bone destruction may be partially or completely masked by superimposed intact bone. In these latter instances tomography is essential for proper diagnosis. In either case, the tomographic examination provides reliable information as to the extent of the disease, a factor of great importance in the formulation of an adequate treatment plan. Tomographic studies are performed with the patient prone, a total of eight coronal sections being made at distances from 2 to 9 cm. above the table-top. The area thus covered extends from the anterior maxillary wall to the posterior margin of the sphenoid sinus. Each section represents a tissue width of approximately 3 mm. Sagittal tomograms of the affected side are employed when required.

Changes of the Skeletal System in Cushing's Syndrome.

W. J. HOWLAND, JR., *et alii* (*Radiology*, July, 1958) made a study at the Mayo Clinic of 69 patients with Cushing's syndrome for whom lateral spinal skiagrams were available. Radiological evidence of osteoporosis was present in 68 of the 69 patients. This osteoporosis was of approximately equal severity in the spinal column, pelvis and ribs. Osteoporosis of the extremities was less severe and was occasionally absent. About 40% of the skull skiagrams showed an irregular, "metastatic" type of decalcification. Sellar enlargement was present in seven of 43 cases. Two-thirds of the 69 patients had rib fractures and six had pelvic fractures, but rarely was a patient aware of these. Marginal condensation of multiple vertebral bodies associated with compression fractures occurred in 29 patients. This involved principally the lower thoracic and upper lumbar regions. In eight of 18 cases, skiagrams made after remission showed improvement in the spinal osteoporosis. Post-treatment skiagrams were available for eight patients whose spinal skiagrams showed marginal condensation. The condensation had decreased or disappeared in six of these. The disappearance of zones of condensation may be the first radiological sign of improvement of the disordered bone metabolism. Marginal condensation of vertebral bodies may thus be said to be frequently associated with vertebral fractures in Cushing's syndrome, but rarely seen in other forms of osteoporosis. The finding of multiple painless fractures of ribs and pelvis appears to be a distinctive feature of this disease.

Bone Changes in Tuberose Sclerosis.

T. D. HAWKINS (*Brit. J. Radiol.*, March, 1959) describes and illustrates some of the bone changes to be seen radiologically in cases of tuberous sclerosis. In the calvarium, patchy areas of increased bone density may be seen. They occur after puberty and are most common in the parietal region. These changes have been shown to be due to hyperostosis of the inner table and of the trabeculæ of the diploic spaces. There can also be a more generalized thickening and increase in density of both tables of the skull vault. Evidence of raised intracranial pressure (suture diastasis, sellar changes, increased convolutional markings) is a rare manifestation, occurring when a subependymal nodule causes obstructive hydrocephalus. In the hands and feet irregular deposition of subperiosteal bone occurs, commonly on the shafts of the second, third and fourth metatarsals, and less commonly on the metacarpals. The cortical bone is unevenly thickened, producing undulation of the contour of the shaft. There is a change in bone density and trabecular pattern, with "cyst" formation in the phalanges. These changes are most common in the hands. The "cysts" are seen most frequently in the terminal phalanges. There is a fragmentation of the cortex of the shafts of the phalanges. This change would probably be better described as cortical pitting, since the individual lesion is a pit or depression in the surface of the cortex which is only seriously disturbed if these lesions are numerous or confluent. The pits vary widely in size, shape and depth, are usually clearly delineated, and are confined to the cortical bone. The cortex adjacent to these pits may be thickened, but the shaft of the phalanx is rarely widened. In the long bones cystic or fibro-cystic changes, irregular cortical thickening and coarsened trabecular pattern are seen. There may also be small periosteal nodules and circumscribed areas of bone sclerosis. Patchy areas of increased bony density are also seen in the pelvis and spine.

Radiology of Acute Pancreatitis.

D. F. CANTWELL AND A. V. POLLOCK (*J. Fac. Radiol.* (*Lond.*), April, 1959) state that radiology has an important part to play in supporting the diagnosis of acute pancreatitis, in demonstrating the complications, and in assessing progress. The first examination the radiologist may be asked to make is of plain films of the abdomen, both erect and supine. These films may show: (*a*) paralytic ileus, the distension with fluid and air being usually generalized, involving the small and large bowel; (*b*) the gas "cut-off" sign in the transverse colon, when gas is seen in the hepatic and splenic flexures but not in the transverse colon; (*c*) calcification in the pancreas; (*d*) opaque gall-stones; (*e*) an elevated diaphragm and changes in the lung bases. The authors have found the presence or absence of the psoas shadow to be so variable as to be without value. Barium meal examination is most rewarding. In the acute stage the patients are examined in bed in the ward. When the acute stage has passed off they are examined in the X-ray department. The examination should be brief, swift and precise, carried out in the semi-recumbent position, if necessary, using a small quantity of barium. In the stomach the following changes may be observed: (i) Irregularity of the gastric mucosal pattern, which may appear stretched if associated with a pseudopancreatic cyst; at times the irregularity may resemble the distortion due to carcinoma. (ii) Forward displacement of the stomach; if in the direct lateral view any part of the posterior wall of the stomach is more than the breadth of a lumbar vertebral body away from the spine, this is taken as evidence of forward displacement. (iii) Elevation of the pyloric antrum; this is usually the cause of widening of the duodenal loop. (iv) Associated gastric ulcer. In the duodenum there may be: (i) dilatation of the duodenum and pooling of the opaque medium; (ii) duodenal irritability and mucosal thickening; (iii) widening of the duodenal loop; (iv) duodenal diverticula or duodenal ulcer. In all patients who had cholecystography performed within the first two weeks the cholecystogram was abnormal. Transduodenal pancreatography during operation is discussed, but it is pointed out that the examination is not without danger and may have caused acute pancreatitis on two occasions, once with

a fatal result. Chest radiography may reveal elevation of the diaphragm, pleural effusion or inflammatory changes at the lung bases.

Pancreatography in the Diagnosis of Chronic Relapsing Pancreatitis.

A. V. POLLOCK (*Surg. Gynec. Obstet.*, December, 1958) discusses the use of pancreatography in the diagnosis of chronic relapsing pancreatitis. The pancreatic ducts were examined radiographically after injection into them of radio-opaque material (*a*) in 33 cadavers without clinical history of pancreatic disease, and (*b*) in 11 patients undergoing transduodenal division of the sphincter of Oddi, in most cases for recurrent pancreatitis. It was found that the "normal" duct showed considerable variation in calibre and pattern, and that the duct in patients with pancreatitis was equally variable, and that there did not appear to be any pancreatographic picture typical of chronic relapsing pancreatitis. Two patients developed acute pancreatitis after sphincterotomy and pancreatography, and one of them died. The author concludes that transduodenal pancreatography is an examination of negligible diagnostic value and is not devoid of serious danger.

Bone Involvement in Synovial Sarcoma.

B. STRICKLAND AND D. H. MACKENZIE (*J. Fac. Radiol.* (*Lond.*), April, 1959) discuss a group of malignant tumours arising from joint capsules, bursæ and tendon sheaths. They usually arise in the neighbourhood of joints, most commonly in the extremities, and often possess certain histological features which enable the diagnosis to be made with assurance. The authors present the radiological findings in 18 cases of histologically proved malignant synoviomas, all of which showed radiological evidence of bone involvement. A periosteal reaction in association with pressure atrophy should arouse the suspicion of synovial sarcoma. Without this pressure atrophy, however, the periosteal proliferation renders chronic osteomyelitis the most difficult diagnosis to exclude, and the gradual obliteration of tissue planes serves to add to the confusion. However, in synovial sarcoma there is often a large soft-tissue mass present, and sequestra do not occur unless infection takes place after biopsy. In the rare instances where there are both sclerosis and lysis in the same bone it may be almost impossible to make a firm diagnosis from fibrosarcoma. If a periosteal reaction is added to this, osteomyelitis is again closely simulated. In the osteolytic group the associated pressure atrophy is of the greatest importance in diagnosis, since it is a rare phenomenon in other conditions, except perhaps in a neurofibroma undergoing malignant change. This atrophy may affect either the invaded bone itself or the bones adjacent to the primary tumour. In the absence of pressure atrophy, the condition may be impossible to differentiate from a solitary osteolytic metastasis, or in children from either a tuberculous or pyogenic bone abscess. When the bone is invaded at the sites of capsular attachment and there is accompanying osteoporosis, tuberculosis may be simulated. The presence of a lobulated soft-tissue tumour creeping across the edges of the joint may be of help in excluding tuberculosis, and the absence of joint effusion and the relative normality of the invaded bone also favour the exclusion of this condition. It seems that too much importance has hitherto been attached to the appearance of soft-tissue calcification on X-ray films as a hall-mark of synovial sarcomas. When this does occur it is of great help in diagnosis, but such calcification can also occur in fibrosarcoma of muscle, and in any event it is too infrequent to be of major value in diagnosis. It is again emphasized that synovial sarcomas not infrequently occur in areas remote from joints and that involvement of joint surfaces is not a stigma of this tumour.

RADIOTHERAPY.

P^{32} Uptake in Malignant Melanoma.

A. GREEN (*Proc. roy. Soc. Med.*, June, 1959) has studied the uptake of radioactive phosphorus (P^{32}) in cases of malignant melanoma. He states that P^{32} injected intravenously is absorbed into the active metabolism of the cell and that tests of this have been made in a patient suffering from advanced carcinoma of the breast. After intravenous administration of P^{32}, surface beta ray counting has shown high readings in an area of active malignant growth, medium readings where there was a moderate quantity of cancer cells, and low ones where there was no malignant growth. This was confirmed by histological sections and autoradiographs. Two elderly patients with malignant melanoma were given 50 microcuries of P^{32} intravenously before treatment with X-ray therapy, which was administered over a period of five to 10 weeks. During this time, repeated tests for uptake of P^{32} in the tumour showed a decline and the dose was stopped when the uptake showed no abnormal elevation of uptake. These two patients have been well for two years. The usefulness of such a procedure is pointed out in the differential diagnosis of brown stains and hæmatoma, and it appears, in the author's opinion, that a low reading means no malignancy.

Cancer of Base of Tongue.

M. LEDERMAN (*J. Laryng.*, May, 1959) reviews a series of 245 cases of cancer of the posterior third of the tongue, of the linguo-tonsillar sulcus and of the vallecular fossæ seen during the period 1933 to 1957. In 75% of patients lymph node metastases were present. The early cases were treated by telecurie therapy, and X-ray therapy was reserved for the late cases; the main principles were to treat all the local disease with its immediate extensions and to treat the cervical lymph node chains on both sides of the neck, whether nodes were palpable or not. In this series, the over-all five-year survival rate was 14%; for patients with no lymph node metastases the five-year survival rate was 31%. The author states that the advanced age of many of the patients, the late stage at which they attend for treatment, and the radio-resistance of many of the tumours encountered are factors which will persist, and that there is no reason to believe that the use of more powerful radiation equipment or ultra-radical surgery will be likely to overcome these fundamental obstacles. He considers that until more specific remedies become available, the use of radiotherapy and surgery must continue, and that when a combination of both methods of treatment is to be employed, then radiotherapy should be given first.

Genetic Effects of X-ray Treatment for Infertility.

I. KAPLAN (*Radiology*, April, 1959) discusses the genetic effects in children of women who have received X-ray treatment for infertility. He states that the deductions of experimental geneticists are questioned by many because of the almost total absence of valid data concerning radiation-induced genetic damage to human offspring. During the past 33 years the author has treated 800 women for sterility by irradiation, and has been able to follow up 644 of these. Out of this number, 351 conceived and there were 688 conceptions in all. At present 35 children of these irradiated women are married, and 31 of these already have had a total of 46 normal children (grandchildren of the original patients). One died as a result of maternal eclamptic toxæmia, but all the others are physically and mentally well, the oldest being now aged ten years. The dosage given to the ovaries was approximately 65*r*. The author states that the series has been criticized as being too small to yield significant data, but that to him the results are more impressive than the geneticists' calculations based on theory.

Cerebral Necrosis following Radiotherapy.

A. RAVINA, M. PESTEL AND J. LAPRESLE (*Presse méd.*, May 27, 1959) state that epilation by irradiation is a particularly efficacious method of preventing the spread of tinea tonsurans. However, the treatment must be carried out by experts with rigorous technique. Even a slight error may produce various types of untoward effects. They report a case in which extensive necrosis of cerebral tissue followed the radiation treatment of a boy, aged six years, for tinea tonsurans. The factors were: four fields at 350*r* each, 110 kilowatts, 12 milliamperes, irradiation time of five minutes per field at a distance of 22 cm. Early falling of the hair was followed by suppuration; this lasted for several months, and finally dried up, leaving the epidermis thin and hairless. Six months after the treatment, attacks of spasmodic contraction of the upper limbs occurred; later the lower limbs were affected in the same way. Three months later convulsive seizures and progressive neurological disturbances occurred. The child was admitted to hospital and fully investigated, but his condition rapidly deteriorated, and he died suddenly 14 months after the irradiation treatment. A post-mortem examination was carried out, and the chief finding was necrosis of the white matter. The authors describe the histological findings in detail. They are of the opinion that the lesions were caused by the irradiation, through an error in dosage combined with faults in technique and in the apparatus.

Brush Up Your Medicine.

URINARY TRACT INFECTIONS: GYNÆCOLOGICAL ASPECTS.

INFECTIONS of the urinary organs compose a large and important group of diseases in women. They are peculiarly chonic, they tend to recur during the period of sexual activity, pregnancy, the puerperium, and they tend to complicate any illness, and in particular gynæcological operations. These repeated infections progressively damage the urinary tract, ultimately causing pyelonephritis which impairs renal function and causes ill health.

Ætiology.

Urinary stasis and incomplete emptying of the bladder are the most important causes. Typical examples are the hypertrophy and dilatation of the ureters of pregnancy, and the residual urine which occurs with prolapsus uteri, and also after surgical, in particular gynæcological, operations.

Vaginal discharges and pelvic inflammation are a common cause of ascending infections of the urinary tract. The close anatomical relationship between the urinary and the genital canals in the female makes it likely that infection in one part may be easily communicated to the other. Cervicitis and urethritis often occur simultaneously. The external urethral meatus is located high in the vaginal introitus, a region which is exposed to bacterial invasion and is often bathed by infected secretions. This infection, as with gonorrhœa, may first infect the paraurethral or Skene's glands. These glands are simple tubules, which run in the wall and beside the lower part of the urethra. The openings are easily seen just inside the urethral orifice. There is a rather complicated paraurethral duct system, especially surrounding the distal half of the urethra, and these ducts, if they are infected, are the foci for many repeated infections of the bladder and the upper part of the urinary tract. Also, infection of these glands may result in granulomatous caruncles, suburethral abscesses, strictures and urethral diverticula. Recurrent cystitis or trigonitis is very often associated with, and is caused by, cervicitis. The infection may reach the bladder via the discharges and the urethra, or by direct lymphatic spread through the bladder wall. It is now well established that cauterization of the infected cervix will very often relieve the patient of her urinary symptoms and cure the cystitis.

Foreign bodies and neoplasms of the urinary tract result in ascending or descending infections.

Lowered general resistance may result in a hæmatogenous infection of the renal tract.

Trauma plays a big role in causing urinary infection, especially when the urethral glands are already infected. Childbirth, vaginal operations, catheterization, coitus and sometimes diapers may cause an exacerbation of the cystitis or pyelitis.

Catheterization and the passage of instruments into the bladder are an undoubted cause of cystitis. This does not mean that the catheter or instrument is unsterile, but that the trauma of passing the catheter or instrument may start up a dormant infection probably already in the urethra. Retention of urine, or persistent residual urine after vaginal operations, will result in cystitis. It has been demonstrated by Boevers and co-workers that, after a vaginal repair operation, it is five to seven days before the maximum emptying contraction of the bladder returns to pre-operative levels.

This coincides with the clinical observation that an indwelling catheter is best left *in situ* for five to seven days after operation. After vaginal operations, my practice is to leave a Foley catheter or a simple catheter in the bladder until just before the bowels are opened; but if the vaginal operation has been performed for the cure of stress incontinence, it must be left in for seven days. The alternative to a retention catheter is frequent catheterization, and this nearly always results in cystitis. Occasionally a patient's bladder is not catheterized at the right time, and fluids are forced, with the inevitable result that the bladder becomes over-distended. An over-distended bladder loses its contractibility, and becomes flabby and atonic. (Compare this with an overstretched strip of elastic.) It cannot empty itself completely, and therefore always contains a residual pool of stagnant urine, which quickly becomes infected. Technical skill in catheterization can be measured with a fair degree of accuracy by the frequency of bacterial contamination. After operation patients are ill, and their general and local resistance is lowered. They do not empty their bladders, and therefore require repeated catheterization (with strict and careful asepsis). This is not always done by skilled persons, and not always under the best conditions, and infection often occurs. Therefore the technique should be as simple and fool-proof as possible. It is also a good idea to wash out the bladder at least once a day, using 2% boric acid solution, or flavine (1:1000), and chemotherapy is advised. Under no conditions must the bladder be allowed to become over-distended. A catheter must be passed regularly, even after the patient commences to pass urine, until the residual urine is less than two ounces.

Bacteriology.

The commonest infecting organism in women is the colon bacillus. Next come the various Gram-positive cocci — streptococci, staphylococci, pneumococci, various diphtheroid organisms, and occasionally *Pseudomonas pyocyanea* and *Proteus vulgaris*. The gonococcus is uncommon nowadays, and although it may cause urethritis and cystitis, it rarely invades the kidney. The tubercle bacillus is not the frequent offender it used to be. The presence of pus cells without organisms in the urine calls for repeated and special examinations for the tubercle bacillus.

Clinical Features.

The severity of the symptoms varies greatly; those of acute cystitis may be very distressing. Frequency of micturition is the outstanding symptom, and it is often so urgent that, if the bladder is not emptied forthwith, urge incontinence may result. Pain varies from mild to agonizing, and sometimes there may be no pain. Hæmaturia is commonly present. Pyuria is always present, except in a few cases of trigonitis and interstitial cystitis. Pyrexia is present in acute cases, or when the upper part of the urinary tract is infected. Examinations may reveal the evidence of pelvic inflammation, cervicitis, vaginitis, urethritis, etc. There may be tenderness over the pubic area, and examination of the urine may reveal pus and some organisms.

Special Forms of Cystitis and Pyelitis.

Trigonitis.

Trigonitis is a common form of chronic cystitis in women, and is usually associated with urethritis and cervicitis. There are congestion and œdema of the trigone and a narrowing of the urethra, and very often polypus formation is seen at the terminal meatus or in the posterior part of the urethra.

Chronic Interstitial Cystitis.

This condition is uncommon, but the surgeon must recognize and treat it, before performing any gynæcological operation. Cystoscopic examination should be carried out on all patients who complain of urinary symptoms. Chronic interstitial cystitis was first described by Hunner in 1914. It affects the vertex or dome of the bladder rather than the trigone, and there are small cracks or ulcers in the mucosa (Hunner's ulcer), with associated œdema and infiltration of the bladder wall with lymphocytes. This type of cystitis occurs mainly in women, and the outstanding symptoms are intense pain in the bladder, marked frequency of micturition, a small capacity bladder and sometimes urge incontinence. Treatment of this intractable disease is very difficult, and is best carried out by the urologist. It necessitates frequent bladder washouts and dilatation of the bladder. Patience and persistence are the keys of success.

Pyelitis or Pyelonephritis of Pregnancy.

In spite of the fact that the hydronephrosis and hydroureter of pregnancy are perfect conditions for the development of infection, pyelitis develops in only 2% of pregnancies. Another factor, such as previous infection or chronic urethritis or cervicitis, is necessary to initiate the infection. The changes in the ureter and renal pelvis are due to the great increase in progesterone during pregnancy. The infection usually develops between the fourth and sixth months of gestation. In about 10% of cases the course of the infection is severe, and unless early treatment is instituted, abortion or premature delivery may result.

Investigations.

The investigations required are as follows:

1. Full physical examination, with special attention to the urinary and genital tracts.
2. Complete examination of the urine, to determine whether there is any associated renal damage.

3. Culture of the urine, and isolation of the infecting organism. Sensitivity tests should be done.
4. Examination of the vulva, cervix and urethra. Examine and culture any discharges. Milk the urethral glands by massaging the urethra downwards.
5. A plain X-ray film of the urinary tract.

In chronic cases, or after an acute attacks has subsided, the following investigations should be carried out: intravenous pyelography, and cysto-urethroscopy with detailed examination of the urethra and bladder wall. Retrograde pyelography is employed only if the intravenous pyelographic findings are inconclusive.

Treatment.

The essentials of treatment are as follows.

Acute Cases.

In acute cases, the patient is ordered complete rest in bed. If the urine is acid, it is rendered alkaline by giving *Mistura Potassii Citratis*, or a similar mixture, every four hours. Once the urine is alkaline, sulphonamides are given. If the urine has been cultured and sensitivity tests have been done, then the appropriate antibiotic or sulphonamide is administered.

Chronic or Recurrent Cases.

In chronic or recurrent cases, the patient is treated as in acute cases, except that it is not necessary to keep the patient in bed. Foci of infection are sought and eradicated: (*a*) Vaginal discharges must be treated and cleared up. (*b*) An infected and eroded cervix should be cauterized. (*c*) If the paraurethral glands are infected, they must be eradicated. This is often done with the cautery, but excision of the lower portion of the urethra containing the infected glands is a much more effective procedure. (*d*) Rarely, when the uterus and adnexæ are infected, hysterectomy and removal of the infected organs will be necessary.

Summary.

Urinary infections are common in the female. Infection may be ascending or descending, but it commonly results from infections of the adjacent genital organs. Cystitis is a common sequela of gynæcological operations, and the importance of a good and careful technique for catheterization is emphasized. The importance of the diagnosis and treatment of chronic interstitial cystitis is stressed. The principles of the investigation and treatment of urinary infections are given, and especially the treatment of any associated gynæcological infections.

Melbourne. R. G. WORCESTER.

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British Medical Association.

VICTORIAN BRANCH: SCIENTIFIC.

A MEETING of the Victorian Branch of the British Medical Association was held on September 3, 1958, at the Royal Children's Hospital, Melbourne. The meeting took the form of a series of clinical demonstrations by members of the honorary medical staff of the hospital.

Hydatid Disease.

MR. N. A. MYERS demonstrated by means of charts, X-ray films and case histories, the manifestations of hydatid disease as seen at the Royal Children's Hospital since 1938. He said that during the past 20 years 71 patients with hydatid disease had been treated; there were four deaths in the series, and the total bed occupancy was 5290 days. Thirty-five of the patients were domiciled in Melbourne; the remainder were country children. Of the children 70% were boys, and 76% of the cases occurred in the age group three to ten years. The annual distribution of cases was also illustrated, and the continued prevalence of the disease was indicated by the fact that in 1957 10 children with hydatid disease had been admitted to the hospital. The cases were classified into four groups according to the site of the disease—pulmonary, hepatic, pulmonary and hepatic, and miscellaneous. Mr. Myers demonstrated the relatively high incidence of isolated pulmonary disease and contrasted it with the relative incidence in adults. Other features which were illustrated included the distribution of cysts (as distinct from the distribution of the disease), the methods of presentation and the results of investigation. The X-ray films presented illustrated features of hydatid disease of the lungs and liver.

Cessation of Circulation After Operation.

DR. I. H. MCDONALD, in a series of charts, summarized the last 20 years' findings in a series of 54 cases, in which cessation of the circulation had occurred during or immediately after operation.

Double Ureters.

MR. F. D. STEPHENS demonstrated the types and anatomical vagaries of double ureters. The basis of infections in double ureters was shown to be urinary stasis. He said that stasis occurred for three different reasons in three types of double ureters: (i) by ureter-to-ureter reflux in the conjoined double ureter; (ii) by reflux of urine from the bladder when the uretero-vesical sphincter was debilitated; (iii) by auto-ureteral reflux when the ectopic ureter was obstructed, either by a mucosal stricture of its orifice in the bladder or by the internal sphincter of the urethra when its orifice lay in the urethra.

Mr. Stephens showed that heminephro-ureterectomy would eliminate ureter-to-ureter reflux in the conjoined ureter; that "triple micturition" would remove stasis when the uretero-vesical valve was debilitated; and that the obstructive mechanism at the lower end of the ureter could be overcome by operations on the orifice of the ureter. In operations on the obstructed ureteric orifice to relieve obstruction, reflux often ensued. The stasis caused by the newly created reflux predisposed to infection. For prevention or cure, it was necessary to remove that urinary stasis by "multiple micturition".

X-ray films and diagrams were displayed to illustrate all those features relating to double ureters in children.

Chronic Osteomyelitis.

MR. J. B. COLQUHOUN and MR. G. G. MCCLOSKEY showed four patients with chronic osteomyelitis, to demonstrate the clinical features of the disease and to emphasize the urgency of accurate early diagnosis and energetic treatment of acute osteomyelitis. The cases discussed demonstrated that unless full and immediate treatment was given, acute osteomyelitis became chronic. Also, the necessity for and advantages of blood transfusion, adequate diet and fresh air and sunshine, in the treatment of osteomyelitis were stressed, as the patients had been treated at the orthopædic section of the Royal Children's Hospital, situated outside Melbourne, beside the sea.

The first patient was a boy, aged two years, who had presented one year previously with chronic osteomyelitis of the right tibia, and a persistent sinus. Initially he had been treated with "Terramycin", but abscess formation had occurred, and the sinus had developed after incision of the abscess. The child was admitted to hospital and sequestrectomy was performed, three sequestra being removed; *Staphylococcus aureus*, sensitive to penicillin, was grown on culture from the wound. Despite streptomycin, tetracycline and sulphonamides given after operation the sinus continued discharging until a further sequestrectomy was performed, after which rapid healing occurred. The boy was sent home on crutches, but three months later was readmitted to hospital with a flare-up of the infection. An abscess which had formed was incised, and the wound healed; but a mild degree of inflammation persisted and was still present, and the patient was in hospital receiving chemotherapy. It was pointed out that an interesting feature of the case was the fact that the affected leg was three centimetres longer than the unaffected leg.

The second patient was a boy, aged 14 years, who had developed osteomyelitis in the lower end of the left femur some two and a half years previously. He was not examined until some considerable time after the onset

of the disease, and X-ray examination at that stage revealed a sequestrum. That sequestrum was removed by operation, but a discharging sinus developed and persisted until another sequestrum, the presence of which was demonstrated by further X-ray examination, was removed. The patient thereafter remained in excellent health for seven months, but the osteomyelitis then recurred, pus discharging through the old operation scar. Further X-ray examination failed to reveal any sequestrum formation. The patient was treated by rest and chemotherapy, and his condition settled satisfactorily. At the time of the meeting the osteomyelitis was clinically quiescent, and the X-ray films showed good bone healing. Almost a full range of movement was present in the affected knee.

The third patient was a child, aged eight years, who had developed osteomyelitis in a number of bones. The left humerus, the right ulna, the lower end of the right tibia and the lower end of the left tibia were affected. Despite initial treatment elsewhere by rest and antibiotics, the patient had discharging sinuses over the left shoulder, over the lower third of the right ulna and over the lower third of the right fibula. Sequestra were removed from the right ulna and the left humerus, with prompt healing of sinus over the left shoulder. After removal of a further sequestrum from the right ulna, that sinus healed A minute sequestrum was discharged from the right fibula, and that was followed by spontaneous healing of the sinus. After that the osteomyelitis had remained quiescent.

The fourth patient was a boy, aged 13 years, who had fallen on his right wrist nine months previously. At first he thought he had sprained his wrist, and he did not seek medical advice till five days later, when his right forearm was sore and swollen. He was admitted to hospital and given chemotherapy, consisting of "Achromycin" and crystalline penicillin. His clinical condition slowly settled down. It was interesting that his temperature had returned to normal before any significant radiological changes had developed. Eventually the X-ray film showed sequestration of most of the shaft of the radius, with massive involucrum formation. Chemotherapy was continued for some months after he became febrile, but five months later an abscess formed over the lower end of the radius. X-ray examination revealed a sequestrum, which was removed, with healing of the sinus. Subsequent X-ray films showed progressive healing of the bone, and at the time of the meeting the condition was clinically and radiologically quiescent.

Glosso-Pharyngeal Breathing After Poliomyelitis.

DR. P. L. COLVILLE showed a man aged 36 years, who had developed severe poliomyelitis in 1954, with gross respiratory weakness and the need for respiratory aid, whose present vital capacity was approximately 600 c.cm., and who was unable to sleep out of a respirator. With glosso-pharyngeal breathing he had a vital capacity of 2300 c.cm., and he used that method of supplementing his respiratory mechanism so that he could comfortably maintain freedom from respiratory aid during the waking hours, whereas previously he had become extremely fatigued. He had been discharged from hospital and used a chest respirator at night, at home. He was able to show highly efficient glosso-pharyngeal breathing, both oral and nasal.

Dr. Colville also showed a girl, aged 11 years, who had a vital capacity of 1100 c.cm., whereas she might have been expected to have a vital capacity of about 2000 c.cm. She had recently learnt glosso-pharyngeal breathing which gave her a possible vital capacity of 1950 c.cm. Her vital capacity had increased to 1300 c.cm., presumably as a result of the stretch given to her lungs by that manœuvre, enabling the same muscles to produce a larger gas exchange. She also showed the influence of poor muscle balance in accentuating scoliosis on deep breathing, whereas with glosso-pharyngeal breathing the scoliosis did not become worse when she fully inflated her lungs.

Acute Hæmatogenous Osteomyelitis.

DR. MURRAY CLARKE surveyed by means of charts and X-ray films the condition of acute hæmatogenous osteomyelitis. He pointed out the dramatic fall in mortality, from 35% in 1938 to 12·7% in 1942, to 1·2% in 1948, down to a very low figure indeed at the present time, and illustrated the way in which those falls had each corresponded to the use of a new method of treatment. Steps in treatment to control infection and to ease tension in the bone were outlined. Investigation by blood culture, subperiosteal aspiration and intraarticular aspiration, in order to confirm the diagnosis, identify the causal organism and determine the drug to be used, was emphasized.

Dr. Murray Clarke pointed out that the differential diagnosis involved many dissimilar conditions varying from meningitis to osteogenic sarcoma, depending on whether osteomyelitis presented in a fulminating, acute or a chronic form. The manner in which scurvy mimicked osteomyelitis both clinically and radiologically and the frequency of that condition in the community were stressed.

Neonatal Osteomyelitis.

DR. R. BIRRELL discussed neonatal osteomyelitis, contrasting that condition with acute hæmatogenous osteomyelitis in the older child. He emphasized the multiplicity of symptoms of presentation, and drew attention to the fact that the causal organism was *Staphylococcus aureus* resistant to both penicillin and streptomycin. He said that in recent years all cases of neonatal osteomyelitis treated at the Royal Children's Hospital were caused by such resistant organisms, the infections having been derived from maternity hospitals.

Dr. Birrell showed X-ray films to demonstrate the great amount of irregularly shaped extracortical new bone formation which resulted early in the clinical course of the disease, and also emphasized the rarity of sequestrum formation in neonatal osteomyelitis.

Foreign Bodies in Lower Air Passages.

DR. C. PYMAN gave, with a twofold purpose, a review of 15 cases in which foreign bodies had been removed at the Royal Children's Hospital. First, the common diagnostic features of foreign bodies in the lower air passage were illustrated. Secondly, examples of cases in which the provisional diagnosis was wrongly reached were presented. Dr. Pyman said that in order to appreciate the possible clinical picture, one had to realize that it could be modified by certain factors. In that regard, two aspects should be considered: (i) the nature of the foreign body, (ii) the type of the valvular effect it had on the airflow in the bronchus.

Discussing the nature of the foreign body, Dr. Pyman said that it might be one of three types. The first was mineral; such an object might be (a) present for years before causing symptoms (hæmoptysis was then frequently a primary feature, due to bronchiectasis), or (b) discovered accidentally in the routine taking of a chest film. The second type was vegetable. Peanuts had formerly produced irritative chemical effects, rapidly causing pneumonitis; that was no longer the case, and symptoms would depend on valvular effects.

Uncooked legumes were dangerous; they absorbed water, swelling rapidly, and their presence must always be regarded as an urgent medical emergency. The third type was animal; in that group were such materials as vomitus, pieces of adenoid tissue, teeth and blood. They were usually infected, causing pneumonitis and pulmonary abscess. Later bronchiectasis developed.

Dr. Pyman then discussed valvular effects, which he said could be divided into three types. The first was a by-pass valve, in which there was no interference with the entry or exit of air, and no X-ray changes were found in the lung fields. If the foreign body was radiotranslucent, then the X-ray findings would be entirely negative. The second type was an inlet valve. Owing to the normal dilatation of the bronchus during inspiration, air entered in that phase. But during expiration, contraction of the bronchus closed off the passage at the site of the foreign body, causing expiratory emphysema. To demonstrate that feature, it was necessary always to take postero-anterior films both in inspiration and in expiration. Unilateral emphysema was diagnostic of a foreign body. Bilateral emphysema could be due to a foreign body in the trachea or to asthma. Vegetable foreign bodies, especially peanuts, in the initial stage (until local reaction produced a shut-valve effect) characteristically produced expiratory emphysema. The third type was a shut valve, in which there was complete blockage of the bronchus, and air could not enter on inspiration; collapse resulted. Small fragments in segmental bronchi commonly produced that finding, which was usually best seen in lateral films. Dr. Pyman said that from the description given, it would be seen that the radiological investigations of a patient suspected of having a foreign body in the lower air passages required (i) postero-anterior films in inspiration and expiration and (ii) lateral films.

Dr. Pyman went on to say that with regard to the actual clinical presentation, three aspects must be considered. The first was the history, which was most important, although it might give absolutely no information in a young child. A definitely suspicious history, even in the absence of clinical features or X-ray changes, warranted a bronchoscopic examination. Tracheal foreign bodies often occurred in that group. The second clinical

category was that in which clinical features were present, but no actual history was obtainable; X-ray changes might or might not be present. That category could be divided into two groups. In the first, the acute group, a foreign body may give rise to a number of manifestations. (*a*) There might appear to be laryngo-tracheo-bronchitis. If there was no history of choking, then the cough, stridor and huskiness might be wrongly regarded as due to laryngo-tracheo-bronchitis, especially if some pyrexia developed. (*b*) Sudden severe respiratory obstruction could occur, either from a large foreign body in the larynx or trachea, or from multiple small foreign bodies in both segmental orifices. (*c*) Acute asthma might occur. Foreign body should be suspected if the wheeze was unilateral, or if there were no peripheral rhonchi. (*d*) Pneumonitis might be present. (*e*) A foreign body might be misdiagnosed as lobar pneumonia on the opposite side, owing to tubular breathing from compression of the opposite lung by the marked emphysema of lung containing the foreign body. (*f*) Surgical or mediastinal emphysema might occur—a rare feature in bronchial, but not uncommon in œsophageal foreign bodies.

In the second, the chronic group, a number of features might be seen in long-standing cases: (*a*) hæmoptysis (usually due to an unsuspected foreign body); (*b*) chronic cough, with or without bronchiectasis; (*c*) repeated attacks of pneumonitis; (*d*) recurrent asthma; (*e*) a persistently weak voice. The last-mentioned could indicate a laryngeal foreign body; there might be no cough, as the larynx readily adapted itself.

In the third clinical category, the accidental discovery by X-ray examination of the chest could be the first indication of the possible presence of a foreign body. That might occur in one of three ways: (*a*) by the presence of an unexplained radio-opaque foreign body (plastic materials were almost radio-translucent); (*b*) by unexplained expiratory emphysema (diagnostic, if unilateral); (*c*) by unexplained collapse—that usually called for a diagnostic bronchoscopic examination. Dr. Pyman said it should be remembered that a foreign body in the larynx lay in the sagittal plane, while a foreign body in the upper part of the oesophagus was in the coronal plane. An unsuspected oesophageal foreign body could give rise to pulmonary symptoms—chronic cough and stridor—as the presenting features. In infancy, there might be no dysphagia, owing to the milk diet. In older children, who took solid food, there was usually some difficulty with swallowing. A foreign body might also be mistaken for a stricture.

Inguinal Hernia in Infancy.

MR. D. SCHLICHT discussed the management of inguinal hernia in infancy, and showed a series of wall charts to illustrate the points made. He said that treatment was essentially by operation, except (*a*) for small symptomless hernia (readily managed by a truss) and (*b*) when a contraindication to operation was present (prematurity, failure to thrive, etc.). Operation was used in the majority of cases, because of the danger of irreducibility with the attendant risk of testicular infarction, especially under the age of three months. Operation usually consisted of herniotomy alone. Incision of the external oblique aponeurosis with display of the inguinal canal was recommended, as dissection right up to the level of the internal ring was facilitated by this manœuvre. The use of a truss was definitely contraindicated in the presence of an undescended testis, as atrophy might be produced by pressure.

Mr. Schlicht said that all irreducible herniæ of less than six hours' duration should be submitted to a trial of reduction by taxis. If that was successful, herniotomy should be performed 48 hours later, to allow the œdema to subside. If it was not successful, immediate herniotomy should be performed.

Mr. Schlicht finally showed patients to illustrate the large scrotal hernia which could be managed successfully only by operation, and the small symptomless hernia readily managed by a truss.

Spinal Anomalies.

MR. E. DURHAM SMITH demonstrated some of the consequences of congenital spinal anomalies, by showing patients, X-ray films and slides. Three groups were discussed.

Anomalies of the Sacrum.

Referring to anomalies of the sacrum, Mr. Smith said that of 26 patients studied 18 were living, and all the survivors had major bladder and bowel disturbance. The majority had complete urinary incontinence with paretic bladder and relaxed sphincters; in a minority, although the bladder was paretic, the sphincters were contracted and obstructing, and acted as a pseudo-sphincter in affording minimal control. Of the survivors 60% had vesico-ureteric reflux, and that further added to the difficulties in eradicating urinary infection. Over half of those patients also had paralytic deformities of the feet. Those clinical findings were present in both groups of anomalies—namely, agenesis of whole sacral segments, and hemi-sacra in which the deficit was on half-segments only.

Spina Bifida with Meningomyelocele.

Mr. Durham Smith said that if spina bifida occulta and meningoceles were excluded, 187 children with meningomyeloceles had been studied. Of those children 70% developed hydrocephalus, and four out of five of those children succumbed due to that condition. The onset of hydrocephalus was nearly always revealed within the first three weeks of life, so any surgery of the meningomyelocele should be deferred for that period.

Of the 59 surviving children, all had bladder and bowel disturbance, and nearly all were incontinent. The degree of incontinence of urine was nearly always complete, but a minority had contracted sphincters which afforded a slight measure of control. Mr. Durham Smith said that the urinary management had been found to be very complex, and described some of the methods in use. He went on to say that after the age of 12 months, any deaths were usually due to complications in the urinary tract.

A minority (11) of the survivors were free of locomotor disability, but most had variable degrees of paresis or paralysis of the lower limbs, depending on the level of the lesion. As the commonest site for the lesion was in the lumbo-sacral region, the commonest paralysis was of hip extensors combined with paresis below the knees.

Of the survivors 40% had arrested hydrocephalus, and the mental state of all but two of those children appeared to be normal.

Mr. Durham Smith then briefly mentioned other consequences—namely, the risks of meningitis, disturbances of peripheral vasomotor circulation, pressure sores and genital excoriation, and the deformities of contractures.

Hemivertebræ.

Discussing hemivertebræ, Mr. Durham Smith said that they were not associated with neurological abnormality, but generally resulted in some degree of scoliosis. In some cases there might be gross abnormality of many vertebral bodies, resulting in severe deformity.

Diarrhœa in Childhood.

DR. CHARLOTTE ANDERSON demonstrated by the use of display boards and charts the causes of diarrhœa, acute, chronic or recurrent, in children. Special emphasis was given to the management of acute diarrhœa, and to the differential diagnosis of the patients with chronic diarrhœa who were thought to suffer from malabsorption. Points in management of cœliac disease and fibrocystic disease of the pancreas were discussed, and the group of cases often classed together as the "periodic syndrome" were discussed.

DR. JOHN COURT presented brief results of the survey into the incidence of *Giardia lamblia* infestation of the bowel in Victorian children.

Juvenile Hypothyroidism.

DR. N. WETTENHALL discussed the ætiology, modes of presentation, means of diagnosis, appropriate investigations, treatment and prognosis of juvenile hypothyroidism and emphasized a number of points. He said that the causes included congenital absence of the thyroid gland or an enzyme defect, and such factors as an iodine-deficient diet, the taking of anti-thyroid substances, and surgical removal of the thyroid gland. In a number of cases the cause was not known. Modes of presentation emphasized were stunting of growth and physical sluggishness, as well as facial appearance, mental retardation and occasionally goitre. Dr. Wettenhall said that the diagnosis could be overlooked if the physician was not alert. The most valuable screening test was X-ray examination of the bones to demonstrate delayed epiphyseal development. A low serum protein-bound iodine level was diagnostic. The serum cholesterol level was almost always raised. Other tests might be of interest, but were not so much help diagnostically.

Dr. Wettenhall went on to say that treatment with thyroid or thyroxine must be adequate, the dosage being increased gradually till toxic effects were produced.

Restoration of bone age to normality was a better indication of adequate dosage than clinical impressions of increased physical activity and improved mental state. Favourable points in the prognosis were mild symptoms, a late onset and early treatment. Unfavourable points were the opposite.

Dr. Wettenhall then showed three patients with hypothyroidism. One was an infant, aged five months, who had been seen for the first time four weeks previously, when the child was admitted to hospital with pneumonia. Her facial appearance had suggested hypothyroidism, and that was confirmed by the absence of epiphyseal centres normally present at birth, and by a serum protein-bound iodine level of 0·6 microgramme per 100 ml. (normal levels, 3·5 to 7·0 microgrammes per 100 ml.). The two other children were aged approximately five years, and each presented with retarded growth. Mentally they were normal, and the gross features of cretinism were not present. The diagnosis was confirmed by the finding of retarded epiphyseal development, a raised blood cholesterol level and a low protein-bound iodine level. Each had responded with a prompt increase in height and corresponding epiphyseal development, as well as in becoming more active.

Cushing's Syndrome due to Adrenal Hyperplasia.

DR. WETTENHALL also presented a boy, aged 11 years, who had suffered from Cushing's syndrome due to adrenal hyperplasia. When he was first seen in April, 1957, he had the classical clinical signs of Cushing's syndrome, and the diagnosis was confirmed by appropriate investigations. Bilateral total adrenalectomy was performed in June, 1957, since when the boy had been maintained on cortisone. He had remained well and had grown in height, and his blood pressure, which had previously been raised, was now within the normal range. Dr. Wettenhall said that the case would be reported more fully elsewhere.

Recurrent Abdominal Pain.

DR. M. BLANCH and DR. W. H. KITCHEN presented the results of study of 40 consecutive new cases of recurrent abdominal pain at a medical out-patient clinic at the Royal Children's Hospital. The widely varied possible causes of such vague, recurrent pains were discussed, with particular emphasis on the history of each attack and the importance of an accurate past history and family history. In the series of 40 children, whose ages ranged from four to 13 years, 36 patients were considered to have a purely emotional basis for the symptoms, and responded at a greater or lesser degree to reassurance, explanation to the parents and sedation of the child.

It was pointed out that in that "emotional" group there was, in almost all instances, a readily elicited history of gross emotional stress in the home, with disturbance of the child in consequence. Clinical examination gave negative results. Investigations such as barium X-ray studies and intravenous pyelography were carried out only if the history suggested that they were necessary. It was also found that a high proportion of patients in that group had relatives with migraine or abdominal pain. In three cases no definite diagnosis had been made, despite an extensive search for an organic cause. In two cases a recurrent urinary tract infection existed, and its control relieved symptoms. In one case gross constipation with a functional megacolon was found. Bowel washouts and laxatives relieved symptoms completely. A summary of the differential diagnostic features between functional and organic causes of abdominal pain was presented. Finally, that series of 40 children was compared with 108 patients complaining of chronic, vague abdominal pain among 1000 British school children examined medically (Apley and Narsh, *Arch. Dis. Childh.*, 1958, 33:165), and the 95 children in a hospital series in the United States of America (Woods, *Ped. Clin. N. Amer.*, May, 1955).

Progressive Myositis Ossificans.

DR. DOUGLAS GALBRAITH showed a girl, aged nine and a half years, suffering from progressive myositis ossificans. It had ben first noticed in April, 1957, after a fall on the arm and shoulder. Masses in the soft tissues were palpable, and X-ray films showed widespread deposition of calcium salts in the soft tissues of the trunk, the upper parts of the arms and the neck. Microdactylia of both thumbs was also demonstrated. In spite of heavy dosage with cortisone there had been little improvement in the condition, and the girl had severe immobilization of her trunk and shoulders. There were also some masses in the right calf and limitation of movement of the right ankle. The biochemical findings were normal.

Dr. Galbraith said that that was an uncommon disease characterized by proliferative inflammation in portions of the fibrous tissue of muscles, tendons, aponeuroses, fasciæ and ligaments. That progressed to formation of bone, which eventually led to destruction of the involved muscles and ankylosis of adjacent joints. In a series of 112 cases, the disease had commenced before the age of 10 years in 102, and the incidence of male to female was 4:1. The cause of the disease was unknown. Associated factors appeared to be infection and injury, together with a probable congenital metabolic factor. In 75% of the cases there were various associated congenital abnormalities, most commonly microdactylia of the great toes or thumbs. There were three stages in the morbid anatomy. The first stage was characterized by swelling, œdema and hæmorrhage in the fibrous tissues in and around involved muscles, and proliferation of fibrous tissue. The skin and subcutaneous tissues might be normal or swollen and red. In the second stage, the newly formed fibrous tissue contracted and formed a mass. Bundles of muscle fibres were caught in the fibrous tissue and underwent degeneration. Cells resembling cartilage appeared, and then osteoid tissue. Calcification followed. In the third stage ossification occurred, the new bone being clinically and structurally indistinguishable from normal bone. Dr. Galbraith said that the prognosis was unfortunately poor, although cases had been described in which cortisone given during the first stage appeared to bring about remission.

Anæmias of Infancy and Childhood.

DR. JOHN COLEBATCH, MISS BETTY WILSON, DR. BRIAN FARAGHER and DR. MARGARET HORAN presented the problem of diagnosis of the anæmias of infancy and childhood, and gave special demonstrations of three particular varieties of anæmia.

Dr. Horan showed the results of a study of hæmoglobin and other values in normal infants, illustrating the fundamental importance of knowing the normal range of values at different age periods when one interpreted the blood picture.

The approach to the diagnosis of anæmias throughout childhood was presented by the group, with a large display board on which the following were demonstrated: (i) the chief mechanisms in the production of anæmia—blood loss, blood destruction, lack of hæmatopoietic factors, bone marrow dysfunction; (ii) the diagnostic significance of changes in the blood film, reticulocyte count, white cell count and serum bilirubin level; (iii) the commonest causes of each mechanism producing anæmia at the Royal Children's Hospital. The commonest causes included infections, malnutrition, post-operative hæmorrhage, erythroblastosis fœtalis and leukæmia.

Megaloblastic anæmia of infancy was demonstrated by Miss Wilson, who analysed the findings in 16 cases diagnosed in the hospital over the past eight years. The patients presented at ages ranging from four months to two years, except for two twins, whose age was only two months at the onset. An inadequate diet was recorded or suspected in every case. The blood picture differed from that of pernicious anæmia in that macrocytosis was seldom prominent; the diagnosis was established by examination of marrow puncture smears. Treatment with folic acid was rapidly effective, but blood transfusion proved to be hazardous, owing to the risk of overloading the circulation in infants with that type of anæmia.

Dr. Faragher presented some findings from a study of the records of 38 patients with hereditary spherocytosis treated at the Royal Children's Hospital. Absence of a family history of the disorder was a common finding when special testing of the relatives had not been carried out. With regard to the age of onset of the clinical picture, it had been found, contrary to the statements in textbooks, that 13 of those 38 patients had been presented in the first year of life, and nine of them in the neonatal period. The characteristic clinical picture in the infants differed from that in older children, in that jaundice rather than anæmia was the usual presenting symptom particularly in the first three months, and palpable enlargement of the spleen was often absent.

Dr. Colebatch demonstrated the main facts of clinical importance concerning fœto-maternal transfusion, a form of post-hæmorrhagic anæmia in the newborn. Although anæmia in the early days of life was often due to erythroblastosis fœtalis, in many cases hæmorrhage was the cause. Fœto-maternal transfusion was only one of nine mechanisms by which hæmorrhage from the fœtus or from the newborn might develop, and O'Connor had found evidence of that mechanism in some 2% of deliveries. At the Royal

Children's Hospital and the Royal Women's Hospital, Melbourne, six cases had so far been recognized. The diagnosis was based on evidence of a hæmorrhagic type of anæmia in the infant, *plus* a high level of fœtal hæmoglobin in the mother's serum (greater than 2%) subsiding to normal levels within three months. It was important to exclude asphyxia pallida and erythroblastosis fœtalis in the differential diagnosis. Treatment included blood transfusion in the severe cases, the exhibition of iron in the milder ones.

Out of the Past.

In this column will be published from time to time extracts, taken from medical journals, newspapers, official and historical records, diaries and so on, dealing with events connected with the early medical history of Australia.

OUR JUNIOR CONTEMPORARY.[1]

[From the *Australasian Medical Gazette*, November, 1896.]

OUR attention has been drawn to a half-page advertisement emanating from the British advertising agents of the Intercolonial Medical Journal of Australasia, stating that that journal is "the only intercolonial journal published in Australasia". We regret that the management of that journal should have allowed such a misleading and false statement continually to appear in its advertising columns. The Australasian Medical Gazette is now completing the fifteenth year of its existence as the Journal of the Australasian Branches of the British Medical Association, and the mouthpiece of all qualified medical practitioners in the Australasian Colonies and British Settlements in the Southern Hemisphere. This is well known to the management and advertising agents of our junior contemporary. We trust that this misstatement may have originated from some misapprehension, error, or oversight, but it would be well for those responsible to bear in mind that any contracts for advertisements obtained through the promulgation of such an unfounded announcement are liable to repudiation, through such having been secured by means of a misleading statement.

Correspondence.

MEDICINE AND ATOMIC WARFARE.

SIR: Dr. Douglas Everingham has drawn attention to the problems of war and peace in this age of atomic weapons (MED. J. AUST., July 25, 1959). The present letter has been written in support of his letter; for peace is better than war.

There is a vital need for improvement in international political organization, and for world government created in accordance with the liberal conceptions of the constitution of a global Commonwealth. Such a union, overriding national government for the common defence, has become an overdue necessity.

There has been continued progress in building the comity of nations through the years. From the first World War came the practical League of Nations. The second World War brought the improved organization of the United Nations. Both of these valuable unions have provided ready means for conference; but both have, or have had, all the weakness of confederations; they have no effective organs of world government, and no effective means of keeping the world's peace.

The men who labour in the field that will bring world peace are in a good company. In that field have been Hebrew prophets who sought the means that would turn swords into ploughshares; Saint Augustine, who sought the *Civitas Dei*, the City of God; Dante, who sought an authority to rule the nations; and Grotius, who laboured for the rule of law. In more recent times Alfred Nobel used his talents to seek the olive branch of peace; H. G. Wells used his facile pen for the same worthy cause. Either you are for cosmopolis (world union), he said, or you are for war; there is no alternative. Pitman Potter ably dealt with the problem, and he indicated the creation of the essential form of international political organization. With the coming of the World Commonwealth, he observed in words which linger, there would come the twilight of the Gods of War.

Sovereign power within the nation, in the last analysis, lies in the hands of common man. It may well be that from the coordinated initiative of the common man will come that supreme union which Tennyson prophetically has called the Parliament of Man, the Federation of the World. The constitution of the great commonwealth would establish no political party. It would be the simple framework which would enable world government to be created. It would bring into existence, on a global scale, government of the people, by the people, for the people. It would be created by, or on behalf of, the people, to give law, and order, and peace.

Government means planning; and international government would imply world planning, including the creation of the means to guarantee global peace. With such a union, all international disputes would be settled by legislative or judicial means. Certainly it should not be beyond the wit of man to create the Great Union. That union would have power over the individual; but the individual would have a direct interest in the union. This way lies peace.

In the task of making the Great Commonwealth, where is the place of the man of medicine? Medicine is international; it knows no geographical frontiers. Medical men such as Pringle paved the way for the proper care of the soldier wounded on the blood-red fields. Medical men aided Henri Dunant—that great visionary who was wont to say that all men are brothers—to create the Red Cross and all that it now stands for. They have formed from time to time associations to help in finding the solution that will wipe out for ever the last of the outworn social institutions—the Great Plague of War. They are of necessity dedicated to the perennial problem; and as Dr. Everingham has mentioned in his letter, medical men like Lord Boyd Orr and Dr. Brock Chisholm rank among those who have sought, in a full measure by practical devotion to the worthy cause, the constitutional means of peace.

Medical men are among those who serve on scarlet fields and who look on red horizons as cities burn; they know the horrors of war and they surely recognize its barbarous futility. They know the hazards of atomic radiation, and the genetic results of nuclear explosions. They must surely realize the need for a better system; believing, as Einstein believed, that force is no remedy. Cannot, therefore, men of medicine, organized as they are nationally and internationally, rank themselves with all those noble pioneers who seek by concerted action to create, or to have created, that supreme constitutional instrument of government which will surely give to a war-weary world a peace that will endure?

Yours, etc.,

S. J. CANTOR.

New Norfolk,
Tasmania.
August 4, 1959.

PREMEDICATION OF CHILDREN.

SIR: Sometimes we deal ill with small children prior to anæsthesia. They are comparatively easily overcome on the operating table, and premedication therefore is often limited to the vagal suppressive atropine. A pre-operative routine which will induce some comfort yet remain safe and efficient is well worth while. For nearly two years at the Royal Children's Hospital, Melbourne, we have been confirming the value of the oral administration of methyl-pentynol ("Oblivon") together with hyoscine as first described by Gusterson, and now, after several hundreds of administrations, we find that the method is sufficiently satisfactory to remind those who anæsthetize children of its usefulness.

Originally tried by our registrars for children undergoing tonsillectomy, it has since been used for a great variety of cases, and now is the premedication of choice for all patients under the age of five years. The hyoscine is dissolved in the methyl-pentynol elixir in the proportion of 1/200 grain (0·3 mg.) to 1 teaspoonful (4 c.cm. = 250 mg.), and the dose is approximately one teaspoonful per stone. If the child is particularly apprehensive, a slightly larger dose may be safely given, but we suggest that 1 mg. of hyoscine be an upper limit. Surprisingly enough the great majority readily drink the blue mixture, particularly from a small colourful glass, and having done so, reach a satisfactory state of euphoric quietude within the half hour.

[1] From the original in the Mitchell Library, Sydney.

Anæsthesia is best induced about one hour following administration, when the oral secretions will be in abeyance, the child sometimes asleep, and the respirations untroubled and undiminished. There seems to be no nausea before anæsthesia, whilst recovery has not been prolonged, nor associated with restlessness.

To summarize, this premedication is pleasant to receive, easily administered, and induces quietude without undue depression. The child is spared a needle.

Yours, etc.,

Department of Anæsthesia,
Royal Children's Hospital,
Melbourne.
August 25, 1959.

IAN H. McDONALD.

X-RAY REPORTS.

SIR: One of my present endeavours is to collect documentation on X-ray reports, i.e., those somewhat ephemeral texts in which the roentgenologist lists and interprets the findings elicited during diagnostic (fluoroscopic and/or roentgenographic) examinations.

Since literature on this subject is relatively scarce, bibliographic indications (perhaps reprints) in any language would be of help. Quotable sentences on what should, or on what should not, be included in X-ray reports, are also invited. Most of all, the undersigned would like to receive originals of X-ray reports, in any language, dated prior to 1910, or more recent ones, if signed by renowned radiologists. Incidentally, does anybody know who wrote the first X-ray report?

The original X-ray reports received, after being photographed for possible reproduction, will be returned to the sender, if so desired, or else retained for an exhibit. Needless to emphasize that proper source credit would be forthcoming in the event of publication.

Please mail all communications to the undersigned.

Yours, etc.,

Box 293, Champaign,
Illinois, U.S.A.
August 25, 1959.

E. R. N. GRIGG, M.D.

THE CASE AGAINST TONSILLECTOMY.

SIR: Recent publicity combined with Dr. M. E. N. Smith's article "Death from Tonsillectomy" (1959) once again focuses attention on this *cause célèbre*. Briefly, four cases are described, in which death occurred during or soon after tonsillectomy. The reaction to this provocative article was interesting. Two weeks later a pathologist suggested routine pre-operative blood testing to exclude serious hæmatological disease or a bleeding tendency. This was denied to be worthwhile the next week, as the real "bleeder" was so obvious. A G.P. then recalled the decision of the Medical Research Council in 1938 (Medical Research Council, Special Report, No. 227) that tonsillectomy was "a prophylactic ritual carried out for no particular reason, with no particular results". He stressed the psychological background to the consultation between the doctor, the parent, and the child.

Meanwhile the whole world of oto-laryngology lay silent until, two weeks later, the first protest appeared. An E.N.T. surgeon recalled 35,000 cases with no deaths at his hospital in the last 12 years, as well as a detailed list of complications in a personal series in 1934, none of which was fatal, and none of which required blood transfusion. This latter was not then available. He suggested that there might be considerable "mental trauma" undergone by children in their first visit to hospital. On the same page (*Lancet*, May 2, 1959, page 945), in answer to a question in the House of Commons, it was revealed that in 1958 the operation was mentioned on 33 death certificates. A little experience of death certification and of the age group involved, would leave no doubt in attributing the majority of these to the operation and sequelæ alone.

The onus of proof was on its proponents. Bearing in mind that in 1959 this is still the commonest operation under general anæsthesia in the first two decades, discussion would seem pertinent. Incidence of the operation has varied from 0% to 60% in different areas over different years (quoted by Gale, 1951). Interest has curiously waned since the peak figure in the *Quarterly Cumulative Index Medicus* in 1933 of 352 entries. Yet Kaiser's ("Children's Tonsils In or Out", Philadelphia, 1932) survey of 2200 children by no means showed it to be totally advantageous. It just emphasized the almost impossibility of obtaining satisfactory evidence.

What then are the indications? Formerly a majestically wide spectrum was included, ranging from mental retardation to pneumonia. It is sadly diminished, and McKenzie (1951) abruptly discards "focal sepsis". There is left "chronic tonsillitis", defined as repeated acute attacks, and recurrent otitis media. With regard to malignant disease, it is much less logical than a prophylactic prostatectomy.

In the examination, all agree that the size of the tonsil is unimportant, and the history is the deciding factor. In fact this is given by the parent, who usually entertains a definite wish "to have them out". But they are nearly all persuadable by sound medical advice.

The position would appear to have changed little in the last 20 years. But now we have a comprehensive field of effective antibiotics. Would not prompt, adequate, but never prolonged, antibiotics, supported by bacteriological investigation, deal with the acute attack? Certainly it has reduced the incidence of quinsy, and tamed the *Streptococcus*. Would not sound advice procrastinate, knowing that time was on its side? It is reported that adenoids regrow after operation, and even sometimes require removal a second or third time. After puberty, however, they universally regress. That upper respiratory infections continue as commonly in some, after tonsillectomy, is known, but in precisely how many is not. The facts are available; they are only to be gleaned. Is it possible that there is a case to answer?

Yours, etc.,

Warrnambool Base Hospital,
Warrnambool,
Victoria.
August 25, 1959.

F. R. BRAITHWAITE,
M.B., B.S., D.R.C.O.G.

References.

GALE, A. H. (1951), "Pros and Cons of Tonsillectomy", *Brit. Med. J.*, 1:133.

McKENZIE, W. (1951), "Tonsils and Adenoids in Children", *Practitioner*, 167:622.

SMITH, M. E. N. (1959), "Death from Tonsillectomy", *Lancet*, 1:671.

THE CHALLENGE AHEAD.

SIR: Dr. Nye's disquisition on the state of affairs, and the pamphleting of the Association by moral rearmament medicos augurs, I hope, a serious consideration of politics and economics by our members. May I suggest that moral rearmament in politics is very analogous to christian science in medicine. Also, that Dr. Nye's suggested treatment is really markedly symptomatic, i.e., of symptoms not of causes.

There is a large body of nations in the world whose members base their politics and economics on science with such remarkable success, internationally, industrially, financially and educationally, that it seems that their science—Marxism—is established as securely in politics and economics as the chemistry and physics of our universities in their subjects.

Will a scientific profession be attracted by science in politics?

Yours, etc.,

196 Nepean Highway,
Aspendale, Victoria.
August 25, 1959.

G. P. O'DAY.

ANKYLOSTOMIASIS OR ANCYLOSTOMIASIS?

SIR: I sympathize with your correspondent in his difficulty about the word "ancylostomiasis" (MED. J. AUST., August 29, 1959). The confusion seems to have arisen from the fact that Dubini, in naming the human hookworm in 1843, chose the Greek words *αγκυλος*, bent, and *στομα*, mouth, to form the generic name.

By the rules of transliteration into Latin, *αγκυλος* becomes *"ancylos"*, since there was no "k" in the Roman alphabet and the "c" was pronounced hard irrespective of the following vowel. A further complication was introduced by Dubini in writing the name "Agchylostoma", either because he thought the corresponding Greek word was spelt with χ

instead of "k", or that it was his attempt to preserve the hard sound of the Latin "c". However this may be, the name was eventually promulgated as *Ancylostoma duodenale*, and whatever its pronunciation this has to stand as the zoological name of the worm. It is doubtful whether strict international rules of nomenclature apply to the word "ancylostomiasis"; but there is no doubt that by derivation it should be pronounced "ankylostomiasis", even if this defies the general rules of English spelling.

We have a number of similar inconsistencies in pronunciations of medical and other terms (e.g., the derivatives of κεφαλη), but where "c" comes to us from the Greek via Latin, I personally prefer to retain the hard sound.

Yours, etc.,

T. CLIVE BACKHOUSE.

School of Public Health and Tropical Medicine, Sydney.
August 31, 1959.

Post-Graduate Work.

THE POST-GRADUATE COMMITTEE IN MEDICINE IN THE UNIVERSITY OF SYDNEY.

ANNUAL SUBSCRIPTION COURSE.

THE Post-Graduate Committee in Medicine in the University of Sydney announces the following lectures in the annual subscription course for 1959.

Professor Charles Dent.

Professor Charles Dent, Professor of Human Metabolism, University College Hospital Medical School and Norman Paul Visiting Professor to Sydney Hospital, will give a lecture entitled "Hartnup Disease—An Inborn Error of Metabolism' on Thursday, October 1, at 8.15 p.m., in the Stawell Hall, 145 Macquarie Street, Sydney.

Professor Jethro Gough.

Professor Jethro Gough, Professor of Pathology, Welsh National School of Medicine, Cardiff, will give the following lectures: Wednesday, October 7, at 2 p.m., at the Maitland Lecture Theatre, Sydney Hospital—"A New Look at Lung Pathology". Wednesday, October 7, at 8 p.m., at the theatrette, School of Public Health and Tropical Medicine, Sydney—"Industrial Pulmonary Disease". (This lecture has been arranged in conjunction with the Section of Occupational Medicine of the New South Wales Branch of the British Medical Association.) Thursday, October 8, at 8.15 p.m., at the Stawell Hall, 145 Macquarie Street, Sydney—"Pneumoconiosis". (This lecture has been arranged in conjunction with the College of Pathologists of Australia.) Friday, October 9, at 1.30 p.m., at the Scot Skirving Lecture Theatre, Royal Prince Alfred Hospital—"Occupational Lung Disease". Friday, October 9, at 8.15 p.m., at the Stawell Hall, 145 Macquarie Street—"The Correlation of Radiological and Pathological Changes in Some Diseases of the Lung'. (This lecture has been arranged in conjunction with the College of Radiologists of Australasia.) Monday, October 12, at 8.15 p.m., at the Robert H. Todd Assembly Hall, 135 Macquarie Street—"Emphysema and Honey-Comb Lung". (This lecture has been arranged in conjunction with the New South Wales Post-Graduate Medical Foundation and the Laennec Society.) Wednesday, October 14, at 8 p.m., at the Robert H. Todd Assembly Hall, 135 Macquarie Street—(*a*) "Paper Mounted Sections in the Study of Diseases of Bones", (*b*) "Rheumatoid Pneumoconiosis". (These lectures have been arranged in conjunction with the Section of Pathology of the New South Wales Branch of the British Medical Association.) Friday, October 16, at 8.15 p.m., at the Robert H. Todd Assembly Hall, 135 Macquarie Street—"Lung Changes in (*a*) Asthma and (*b*) Mitral Stenosis".

Dr. L. G. Norman.

Dr. L. G. Norman, Chief Medical Officer, London Transport Executive, and a member of the Expert Advisory Panel on Occupational Health of the World Health Organization, will give the following lectures: Tuesday, October 20, at 8.15 p.m., at the Robert H. Todd Assembly Hall, 135 Macquarie Street—"The Responsibilities of the Medical Practitioner towards Patients who are Unfit to Drive". Friday, October 23, at 8.15 p.m., at the Stawell Hall, 145 Macquarie Street—"The Effect of Drugs and Alcohol on Driving". In conjunction with the New South Wales Post-Graduate Medical Foundation, Dr. Norman will give the following public talks during the Road Safety Congress in Sydney: Tuesday, October 27, at 9.30 a.m., at Anzac House Auditorium, 26/36 College Street, Sydney—"Prevention of Road Traffic Accidents". Tuesday, October 27, at 8 p.m., at the New South Wales State Conservatorium of Music—"Accent on Youth and the Road Accident Problem". Wednesday, October 28, at 10 a.m., at Anzac House Auditorium, 26/36 College Street—"Engineering and Road Safety". Thursday, October 29, at 10.30 a.m., at Anzac House Auditorium, 26/36 College Street—Symposium, "The Car and the Family'—"Human Factors in Road Traffic Accident Causation".

SEMINARS AT ROYAL PRINCE ALFRED HOSPITAL, SYDNEY.

THERE has been a change in the title of the seminar to be held at Royal Prince Alfred Hospital, Sydney, on Friday, September 25, at 1.15 p.m. The subject will be "Oral Hypoglycæmic Agents in the Treatment of Diabetes Mellitus". The speaker will be Professor J. Nabarro (University College Hospital, London), as previously announced.

THE MELBOURNE MEDICAL POST-GRADUATE COMMITTEE.

PROGRAMME FOR OCTOBER, 1959.

THE Melbourne Medical Post-Graduate Committee announces the following programme for October, 1959.

Country Courses.

Colac.—On October 3, at the District Hospital, Colac, the following course will be given: 3.45 p.m., "Management of Ulcerative Colitis", Dr. H. W. Garlick; 5.15 p.m., "Management of Burns and Infected Wounds", Mr. A. R. Wakefield. Dr. R. Sobey, 6 Spence Street, Warrnambool, is the secretary for this course.

Swan Hill.—On October 3, at Swan Hill, the following course will be given: 2 p.m., "Common Ophthalmic Emergencies", Mr. G. Serpell; 3.15 p.m., "Neonatal Deaths and Their Prevention", Dr. J. H. Colebatch; 4.45 p.m., "Untoward Effects of Drugs", Dr. W. Weaver, 16 Beveridge Street, Swan Hill, is the local secretary.

Horsham.—On October 10, at the Wimmera Base Hospital, Horsham, the following course will be given: 2.15 p.m., symposium on "The Diagnosis and Management of Hæmatemesis", Dr. P. J. Parsons and Mr. James Guest; 4.30 p.m., "Use and Abuse of Cortisone", Dr. K. D. Fairley; 8.15 p.m., "Induction of Labour", Dr. C. N. De Garis. Dr. R. Webster, Lister House, Horsham, is the local secretary.

Fees.—The fees for the above-mentioned courses are at the rate of 15s. per session, or by annual subscription to the Committee.

Overseas Lecturers.

Mr. H. Osmond-Clarke, C.B.E., F.R.C.S., Orthopædic Surgeon of London Hospital, will lecture on "Pain in the Neck and Arm", at the Medical Society Hall, on Tuesday, October 13, at 8.15 p.m.

Professor Jethro Gough, M.D., Professor of Pathology and Bacteriology in the Welsh National School of Medicine, is expected in Melbourne for a few days at the end of October, and the Committee hopes to arrange for him to lecture on the evening of Wednesday, October 28, at 8.15 p.m. A further announcement will be made regarding this lecture.

The fees for the above lectures will be 15s. or attendance can be by annual subscription to the Committee.

Symposium on Carcinoma of the Cervix Uteri.

All medical practitioners are invited to attend the symposium on "Carcinoma of the Cervix Uteri", to be held on Saturday, November 7, 1959, at the Royal Melbourne Hospital, from 11 a.m. till 2.30 p.m. The chairman of the symposium will be Mr. H. G. Furnell, and the programme is as follows: 11 a.m., "General Pathology", Dr. R. A. Barter; 11.15 a.m., "Exfoliative Cytology", Dr. Gillian Jacob; 11.30 a.m., "Carcinoma in Situ and Related Conditions",

Dr. H. F. Bettinger; 11.45 a.m., "Clinical Diagnosis", Mr. J. M. Buchanan; 12 noon, "Treatment of Carcinoma in Situ", Professor L. Townsend; 12.15 p.m., "Surgical Treatment", Mr. A. M. Hill; 1.45 p.m., "Radiotherapeutic Treatment", Dr. G. R. Kurrle; 2 p.m., "Palliative Treatment", Mr. L. W. Gleadell; 2.15 p.m., "Results of Treatment", Mr. R. Fowler.

After the presentation of papers there will be an opportunity for discussion. This programme has been arranged by the Melbourne Medical Post-Graduate Committee, in collaboration with the Anti-Cancer Council of Victoria. Attendance and lunch will be without fee. To assist in the arrangements, including catering, it is requested that the Committee be notified of intention to be present not later than Thursday, October 8.

Full-Time Course for Primary F.R.A.C.S., 1960.

Applications close on October 16, 1959, for enrolment in the six weeks' whole-time course in anatomy, physiology and the principles of pathology, for candidates for the Primary F.R.A.C.S. This course commences on January 18, 1960, and is designed for candidates who have already studied these subjects extensively by attending organized courses or by private study. It is planned to give the candidates a complete cover of each subject, and to supplement the normal lectures by discussion grounds, oral testing and quiz sessions. The fee for the course is £52 10s. Enrolments will be limited and will not be accepted on a part-time basis. Application forms are available from the Committee.

Recorded Lectures—Additions to Library.

The following lectures have been added to the Committee's microgroove library, and are available without charge on request: "The Value and Dangers of Steroid Therapy", by Professor R. F. Farquharson, of Toronto; three 10 in. disks and 24 2 in. by 2 in. slides. "Types of Hypertension that may be Relieved by Treatment of a Primary Lesion", by Farquharson; three 10 in. disks and 12 2 in. by 2in. slides. "Medical Diseases of Bone", by Farquharson; three 10 in. disks and four 2 in. by 2in. slides. "Emotional Manifestations in Patients with Structural Disease", by Farquharson; two 10 in. disks.

Information.

The address of the Melbourne Medical Post-Graduate Committee is 394 Albert Street, East Melbourne, Victoria. Telephone: FB 2547.

Obituary.

LENNOX GRAHAM TEECE.

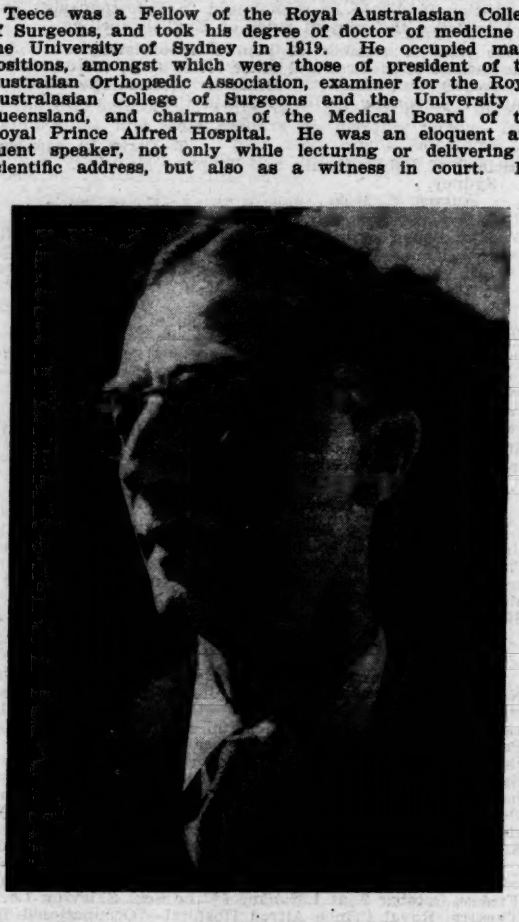
We are indebted to Dr. E. M. Fisher for the following account of the career of the late Dr. Lennox Teece.

Lennox Teece was educated at the Sydney Grammar School, and after losing some time from ill-health, matriculated after a few weeks' work in 1908. This seemed to indicate that examinations were unlikely to present much difficulty to him, and this proved quite true. He was a hard worker and had an exceptionally keen intelligence, and he completed his medical course in 1913, at the top of the pass list in the final examination, with second class honours.

He was appointed as a resident medical officer at the Royal Prince Alfred Hospital, and in his junior year was house surgeon to Sir Alexander MacCormick and house physician to Dr. George Rennie. The following year he became a senior resident, and later, when war was declared and the medical superintendent went to the war, he was appointed to the vacant position. He resigned in his turn, and went to England and joined the Royal Army Medical Corps. There he first became interested in orthopædic surgery, which was beginning to forge ahead under the leadership of Sir Robert Jones. He took full advantage of his opportunities, and qualified himself for what was to come later.

On his return to Australia, he was appointed as the director of the newly established department of orthopædics at the Royal Prince Alfred Hospital, and filled the position till he reached the retiring age. Orthopædic surgery was extending its boundaries in many directions, and Teece kept himself abreast of all the advances in investigation and treatment, new methods, new materials and new discoveries, at the same time he kept his department up to world standards. After his retirement from the active staff, he continued to work hard, to study, to lecture, to teach and to travel, and was looked on by his colleagues as a leader and a master of his art. He died in his sleep in France, while on a trip which was to be more a relaxation than a pursuit of knowledge.

Teece was a Fellow of the Royal Australasian College of Surgeons, and took his degree of doctor of medicine at the University of Sydney in 1919. He occupied many positions, amongst which were those of president of the Australian Orthopædic Association, examiner for the Royal Australasian College of Surgeons and the University of Queensland, and chairman of the Medical Board of the Royal Prince Alfred Hospital. He was an eloquent and fluent speaker, not only while lecturing or delivering a scientific address, but also as a witness in court. He



had a wide experience in this aspect of his work, and was quite at home in the box; he appeared to welcome and enjoy cross examination.

He was a renowned and welcome after-dinner speaker, and in these circumstances his keen sense of humour and sparkling wit could have full play. His greatest interest outside his work and his home was skiing. He was first introduced to the attractions of the snow country in the same way as many of us were—as a medical officer at the Hotel Kosciusko. He soon became an enthusiast, and when circumstances made it possible, went to the snow regularly. By practice he became a sound and able runner, and did his share of exploratory tours in the high mountains. At that time they were not free from risk, as there were no guides, no reliable maps and no refuges above the hotel, other than Bett's Camp. I am sure that there are none of the high peaks between Kosciusko and Kiandra that he has not climbed. When racing rather than touring became a major interest, he took his share of the work as a competitor and later as an official, and some of the arduous jobs fell to him, such as those of course setter and starter. It was in these mountains that he first met and afterwards married Miss Alison Stephen, who made his home a happy one for many years. He played tennis and golf for a number of years, and when he was advised, after an illness, not to go to Kosciusko any more, he turned his attention to racing and was a regular attendant. He began to travel widely, not only abroad, but also in Australia.

Lennox Teece enjoyed living, and he lived a full life. He was enthusiastic, and could become excited and loud

voiced if angry or pleased. I can still hear him yelling for the landing net when he had a good fish on his line at Forster. He was a hard worker himself, and had the same ability as the late Professor John Hunter to make others work hard. He was a good companion under all circumstances, and his fine brain, his keen intelligence and a capable pair of hands—incidentally he was a left-handed surgeon—enabled him to fill the high position he occupied in his profession.

DR. HUGH C. BARRY writes: The recent death of Lennox Teece brings to a close an exciting era of orthopædic surgery in Australia, for he was the first Australian-born surgeon to specialize completely in this field; and yet during the next 40 years he saw it develop at such a pace that today there are approximately 40 orthopædic surgeons practising in Sydney alone.

During the first World War Teece served with the Royal Army Medical Corps at the military hospital established at Shepherd's Bush in London. There he came under the influence of Sir Robert Jones, and met a group of younger British orthopædic surgeons. He became absorbed in the treatment of fractures and nerve injuries among the wounded, and when he returned home to Sydney he decided to specialize in the same problems in civil life. He was soon followed by Denis Glissan and Arthur Meehan, and these three pioneers were responsible in large measure for the establishment and development of orthopædic surgery in Australia today. Teece was made director of an orthopædic department at Royal Prince Alfred Hospital, and his work was centred there till he retired from the active staff in 1948. In his private practice he chose as his assistants Callow, Sweetapple, Hughes, Woodland, Barry, Watts and Greaves, and all subsequently worked in the same department at Royal Prince Alfred Hospital. He was a foundation member of the Australian Orthopædic Association, and later was elected president for two years. He was also a foundation Fellow of the Royal Australasian College of Surgeons.

Teece contributed articles to medical journals on a variety of orthopædic subjects, including tendon injuries, club feet and lesions of the shoulder and knee. His main interest lay in disorders of the knee joint, and he chose this subject for the First Meehan Memorial Lecture at Brisbane in 1956. This was based on 2000 meniscectomies. He also devised a test for the detection of posterior horn tears in semilunar cartilages which has been widely adopted.

He was a prodigious worker, and in addition to a large private practice he rapidly developed almost a monopoly over workers' compensation work in Sydney. Two factors were responsible. The managers of insurance companies realized that men like Teece, who confined their work to the treatment of bones and joints, secured quicker and better results in traumatic lesions in workmen than those who treated fractures as part of their general surgical practice—even if treatment was sometimes based mainly on the wisdom of surgical non-interference. The other factor was his gift of clear, concise expression, both in his written reports and also when giving evidence in court. Often one felt that he could have graced the Bar table as easily as the witness box, and in this role he is unlikely to be rivalled for many years to come.

Away from his work Teece had many interests, chiefly centred on a devoted family. Until a few years ago he drove on most week-ends to his country house at Mount Wilson, skied regularly with the Australian Ski Club and found time for tennis, golf, surfing and racing. In recent years he was reluctantly forced to limit his more active interests and gave more time to the "sport of kings". He died suddenly when on holiday in France. He will be greatly missed by his friends at his clubs and associations for his quick wit and good humour, and perhaps especially for his after-dinner speeches. These have been looked forward to by skiing enthusiasts and orthopædic surgeons alike for many years.

Notes and News.

New Director at Armed Forces Institute of Pathology.

Colonel Frank M. Townsend, U.S.A.F., M.C., has been appointed Director of the Armed Forces Institute of Pathology, Washington, D.C., succeeding Captain William M. Silliphant, M.C., U.S.N. Colonel Townsend is the first Air Force officer to assume the Directorship of the Institute. The Armed Forces Institute of Pathology, which is known throughout the world, is the central laboratory of pathology for the Department of Defense. In addition to serving the Armed Services, the Institute meets the needs of the Public Health Service, the Atomic Energy Commission, the Veterans Administration, other federal agencies and civilian pathologists in the form of consultative service.

A Medical and Biological Electronics Society.

A Medical and Biological Electronics Society has been formed in Melbourne. It is intended to hold meetings, lectures and demonstrations in order to promote cooperation and understanding between the medical profession, biological research workers and technologists. Ultimately the Society will arrange educational courses and the publication of a journal. The Society was established on August 14, at the Department of Physiology, University of Melbourne. Further information may be obtained from the Honorary Secretary, Mr. H. Bratspies, Mental Hospital, Mont Park.

Home Care of the Child with Rheumatic Fever.

A new 24-page illustrated booklet, "Home Care of the Child with Rheumatic Fever", has been published by the American Heart Association and its affiliates. It was prepared especially for parents of children who have or are recovering from rheumatic fever and for whom hospital care is either not advised or not available. It describes in detail the role of the mother in caring for the sick child and the importance of following the regimen prescribed by the physician. Instruction is included on bathing the child in bed, giving medicine, taking the pulse and temperature and keeping records for the doctor. Choosing and preparing food for the sick child, planning a daily schedule for mother and child, and the use of home care equipment are also discussed. It is stated that copies may be requested by physicians and others from local Heart Associations to give to parents of rheumatic fever patients, but we are not aware that it is available in Australia. The address of the American Heart Association in 44 East 23rd Street, New Nork 10, N.Y., U.S.A.

Institute of Scientific Studies for the Prevention of Alcoholism.

An Institute of Scientific Studies for the Prevention of Alcoholism has been planned for educators, church personnel, youth leaders, medical practitioners, social welfare workers and others interested, to be held from January 18 to 29, 1960, at the University of Sydney. The Institute is sponsored by the National Committee for the Prevention of Alcoholism, with the Rt. Hon. F. G. R. Nicklin, Premier of Queensland, as Honorary President. The lecturers will include the following: Dr. Andrew C. Ivy, of the University of Illinois, who is president of the International Commission for the Prevention of Alcoholism; Dr. Winton Beaven, of the Potomac University, who is Director of the International Institutes of Scientific Studies; Dr. Jaroslav Skala, expert advisor on alcoholism for the Czech Ministry of Health, Director of the Prague Anti-Alcohol Clinic and Director of the European Institute of Scientific Studies; Dr. Allan Stoller, Chief Clinical Officer of the Victorian Mental Hygiene Authority; Dr. W. Fryberg, Director General of Health for Queensland. Applications for admission or information should be addressed to the Secretary, 148 Fox Valley Road, Wahroonga, N.S.W.

Naval, Military and Air Force.

APPOINTMENTS.

THE following appointments, changes etc. are published in the *Commonwealth of Australia Gazette*, No. 43, of July 9, 1959.

NAVAL FORCES OF THE COMMONWEALTH.

Permanent Naval Forces of the Commonwealth (Sea-Going Forces).

To be Surgeon Captain.—Surgeon Commander Robert Michael Coplans (Acting Surgeon Captain).

To be Surgeon Commander.—Surgeon Lieutenant-Commander Samuel Francis Hewitt Haughton.

THE following appointments, changes etc. are published in the *Commonwealth of Australia Gazette*, No. 47, of July 30, 1959.

NAVAL FORCES OF THE COMMONWEALTH.

Permanent Naval Forces of the Commonwealth (Sea-Going Forces).

Confirmation in Rank.—Surgeon Lieutenant (for Short Service) (on probation) Thomas Noel Ryan is confirmed in the rank of Surgeon Lieutenant (for Short Service), with seniority in rank of 20th May, 1958, dated 20th May, 1959.

AUSTRALIAN MILITARY FORCES.

Citizen Military Forces.

Northern Command.

Royal Australian Army Medical Corps (Medical).—The provisional ranks of the following officers are confirmed:—Captains 1/39204 H. R. Withers, 1/39215 R. V. Graham, and 1/39198 H. A. Urquhart.

Eastern Command.

Royal Australian Army Medical Corps (Medical).—2/79019 Captain P. A. McReady is appointed from the Reserve of Officers, 3rd April, 1959. The provisional appointment of 2/67299 Captain P. A. Stanton-Cook is terminated, 30th September, 1958. *To be Captains (provisionally)*—2/67299 Peter Alan Stanton-Cook, 1st October, 1958 and 2/127073 Brian Francis William Quinn, 14th May, 1959. *To be Major, 1st April, 1959*—2/135769 Captain D. W. Lawson and is borne supernumerary to the authorized establishment of Majors with pay and allowances of Captain (at own request).

Royal Australian Army Medical Corps (Medical).—2/130116 Captain (provisionally) M. X. Shanahan ceases to be seconded whilst in the United Kingdom, 3rd January, 1959. 2/148005 Captain R. H. Black is appointed from the Reserve of Officers, and to be Temporary Lieutenant-Colonel, 23rd April, 1959. 2/130116 Captain (provisionally) M. X. Shanahan relinquishes the provisional rank of Captain 3rd January, 1959, is transferred to the Reserve of Officers (Royal Australian Army Medical Corps (Medical)) (Eastern Command), and is granted the honorary rank of Captain, 4th January, 1959. 2/108252 Captain (provisionally) D. P. Clarke relinquishes the provisional rank of Captain, 30th April, 1959, is transferred to the Reserve of Officers (Royal Australian Army Medical Corps (Medical)) (Central Command), and is granted the honorary rank of Captain, 1st May, 1959. The provisional appointment of 2/122031 Captain H. W. Thurlow is terminated, 31st October, 1958. *To be Captains (provisionally)*—2/122031 Harold William Thurlow, 1st November, 1958. 2/101243 Philip Blake Humphris, 9th May, 1959, 2/108344 Geoffrey James Dalgarno, 12th June, 1959, 2/130126 Donald Stewart Child, 22nd June, 1959, and 2/130127 Richard Spencer Gye, 23rd June, 1959. *To be Temporary Lieutenant-Colonel, 16th June, 1959*—2/206958 Major W. R. M. Shaw.

Southern Command.

Royal Australian Army Medical Corps (Medical).—The provisional rank of 3/129385 Captain M. G. Whiteside is confirmed. 3/101048 Honorary Captain J. A. Hayman is appointed from the Reserve of Officers and to be Captain (provisionally), 23rd April, 1959. 3/63671 Colonel K. H. Heard relinquishes the appointment of Deputy Director-General of Medical Services, 31st May, 1959, and is transferred to the Reserve of Officers (Southern Command), 1st June, 1959. 3/149015 Captain (provisionally) M. C. Piercy relinquishes the provisional rank of Captain, 27th April, 1959, and is transferred to the Reserve of Officers (Royal Australian Army Medical Corps (Medical) (Southern Command) in the honorary rank of Captain, 28th April, 1959.

Royal Australian Army Medical Corps (Medical).—3/101044 Captain (provisionally) K. F. King is seconded whilst in the United Kingdom, 1st May, 1959. 3/101838 Captain (provisionally), P. E. Campbell relinquishes the provisional rank of Captain, 6th May, 1959, is transferred to the Reserve of Officers (Royal Australian Army Medical Corps (Medical)) (Southern Command), in the honorary rank of Captain, 7th May, 1959. The provisional appointment of 3/129011 Captain A. M. Marshall is terminated, 7th July, 1958. *To be Captain (provisionally), 8th July, 1958*—3/129011 Alan Morrison Marshall.

Central Command.

Royal Australian Army Medical Corps (Medical).—4/32087 Captain (provisionally) C. Croucher relinquishes the provisional rank of Captain, 30th January, 1959, is transferred to the Reserve of Officers (Royal Australian Army Medical Corps (Medical)) (Central Command), and is granted the honorary rank of Captain, 31st January, 1959.

Western Command.

Royal Australian Army Medical Corps (Medical).—The provisional ranks of the following officers are confirmed:—Captains 5/38069 D. H. Wallace, 5/26559 P. M. Connor and 5/38067 B. A. Kakulas.

Royal Australian Army Medical Corps (Medical).—The name of 5/38113 John Manneks Hill which appeared in Executive Minute No. 67 of 1959, promulgated in Commonwealth of Australia Gazette, No. 34, of 1959, is amended to read 5/38113 John Manners Hill.

Tasmania Command.

Royal Australian Army Medical Corps (Medical).—To be Captain (provisionally), 26th May, 1959—6/15428 John Dermod Brennan.

Reserve Citizen Military Forces.

Royal Australian Army Medical Corps (Medical).

Eastern Command.—The resignation of Captain M. de L. Faunce of his commission is accepted, 15th May, 1959.

Southern Command.—The resignation of Honorary Captain P. Rubinstein of his commission is accepted 21st February, 1959. *To be Honorary Captains*—Philip Rubinstein, 2nd February, 1959, Alan Stewart Bodey and Ralph Henderson Lewis, 6th April, 1959.

Tasmania Command.—The resignation of Lieutenant-Colonel M. G. Edison of his commission is accepted, 4th May, 1959.

The following officers are placed upon the Retired List with permission to retain their rank and wear the prescribed uniform, 30th June, 1959:—

Northern Command.—Captain F. C. S. Dittmer.

Southern Command.—Lieutenant-Colonel M. L. Powell, Majors L. G. Morton and H. J. Enniss, Captain (Honorary Major) A. T. Park and Captain L. C. Brittingham.

Central Command.—Lieutenant-Colonel A. C. McEachern and Major I. S. Magarey.

The following officers are retired 30th June, 1959:—

Western Command.—Honorary Major R. H. Nattrass.

ROYAL AUSTRALIAN AIR FORCE.

Permanent Air Force.

Medical Branch.

The probationary appointment of the following Flight Lieutenants is confirmed:—G. A. Tomkins (018879), W. H. Taylor (035272).

Squadron Leader W. J. Bishop (0210441) is appointed to a permanent commission, 27th January, 1959.

The dates in the notification regarding the grant of special leave without pay to Pilot Officer L. G. Trappett (015935) as approved in Executive Council Minute No. 17 of 1958 appearing in Gazette No. 41 dated 24th July, 1958, are amended to read: "13th March, 1958, to 15th January, 1959", inclusive.

Active Citizen Air Force.

Medical Branch.

The following officers are transferred to the Reserve, 1st March, 1959:—

Sydney University Squadron.—Pilot Officer S. B. Renwick (0212684).

Adelaide University Squadron.—Flight Lieutenants L. S. Coats (04733), H. D. Kennare (04800), C. J. Schwartz (042995).

Air Force Reserve.

Medical Branch.

Pilot Officer W. Lee (0311354) is promoted to the rank of Flying Officer, 20th March, 1959.

The notification regarding the termination of appointment of Flight Lieutenant D. C. Ryan (277548) as approved in Executive Council Minute No. 35 of 1958, appearing in Gazette No. 73, dated 27th November, 1958, is withdrawn. The name in the notification regarding the appointment to a commission of Harold Ludivic Rowe Story (257992) as approved in Executive Council Minute No. 5 of 1959, appearing in Gazette No. 21, dated 25th March, 1959, is amended to read: "Harold Frederic Rowe Story".

Medical Societies.

THE OTO-LARYNGOLOGICAL SOCIETY OF AUSTRALIA.

New South Wales Section.

A SPECIAL general meeting of the New South Wales Section of the Oto-Laryngological Society of Australia will be held on Tuesday, October 6, at 8 p.m., in the Committee Room, British Medical Association House, 135 Macquarie Street, Sydney.

Public Health.

POLICE OFFENCES (AMENDMENT) ACT, 1908, AS AMENDED, OF NEW SOUTH WALES.

THE Under Secretary, Chief Secretary's Department of New South Wales, has requested that publicity be given to the following proclamation, gazetted on Friday, August 14, 1959, applying Part VI of the *Police Offences (Amendment) Act* to nicomorphine. The proclamation is to take effect from February 1, 1960.

PROCLAMATION.

(L.S.)
E. W. WOODWARD
GOVERNOR

I, Lieutenant-General Sir Eric Winslow Woodward, Governor of the State of New South Wales, with the advice of the Executive Council, do, by this my Proclamation, declare that Part VI of the Police Offences (Amendment) Act, 1908, as amended, shall apply to:

NICOMORPHINE (di-nicotinic acid ester of morphine) also known as Vilan, its salts, and any preparation, admixture, extract or other substance containing Nicomorphine,

in the same manner as it applies to the drugs mentioned in paragraph (a) of subsection (2) of Section 18 of the said Act.

I hereby declare that this my Proclamation shall take effect on and from Monday, 1st February, 1960.

Signed and sealed this twenty-second day of July, One thousand nine hundred and fifty-nine.

By His Excellency's Command,
C. A. KELLY.

GOD SAVE THE QUEEN!

Congresses.

INTERNATIONAL CONGRESS OF GASTRO-ENTEROLOGY.

THE sixth meeting of the *Association des Sociétiés nationales européennes et méditerranéennes de gastro-entérologie* will be held on April 20 to 24, 1960, at Leyden, Holland, under the patronage of His Royal Highness the Prince of the Netherlands. The Congress is being organized by the Society of Netherlands Gastro-Enterologists. All scientific workers in this field are invited to contribute, by means of a lecture, to the international exchange of ideas, research and experience which is the main purpose of the Congress. The programme covers five working sessions of half a day each. A sixth working session will be devoted to questions concerning X-ray technique. The two main themes of the Congress are as follows: (a) pathology, pathological physiology, clinical aspects of the small intestine; (b) hepatitis, hepatic cirrhosis and their possible connexion. Papers submitted should either apply to one of these two themes, or be devoted to a subject of the author's choice in the field of gastro-enterology. There will also be five panel discussions, as follows: (i) ulcerative colitis; (ii) hepatic coma; (iii) hepatitis and its treatment; (iv) Crohn's disease; (v) diagnosis and treatment of portal hypertension.

DISEASES NOTIFIED IN EACH STATE AND TERRITORY OF AUSTRALIA FOR THE WEEK ENDED AUGUST 15, 1959.[1]

Disease.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Northern Territory.	Australian Capital Territory.	Australia.
Acute Rheumatism	2	3(3)	3(3)	..	..	..	..	..	8
Amœbiasis	..	..	..	..	..	..	..	..	..
Ancylostomiasis	..	..	..	..	..	..	1	..	1
Anthrax	..	..	..	..	..	..	..	..	..
Bilharziasis	..	..	..	..	..	..	..	..	..
Brucellosis	..	1	..	..	..	..	..	..	1
Cholera	..	..	..	..	..	..	..	..	..
Chorea (St. Vitus)	..	..	..	..	..	..	..	..	..
Dengue	..	..	..	..	..	..	..	..	..
Diarrhœa (Infantile)	6(3)	15(14)	12(8)	..	..	..	1	1	35
Diphtheria	..	..	..	..	..	..	..	..	..
Dysentery (Bacillary)	..	..	..	2(2)	1(1)	..	2	..	5
Encephalitis	..	..	1	..	..	..	..	..	1
Filariasis	..	..	..	..	..	..	..	..	..
Homologous Serum Jaundice	..	..	..	..	..	..	..	..	..
Hydatid	..	2(2)	..	..	..	..	..	..	2
Infective Hepatitis	44(4)	18(10)	11(4)	8(3)	2(2)	..	3	..	96
Lead Poisoning	..	..	..	..	..	..	..	..	..
Leprosy	..	..	..	..	2	..	..	..	2
Leptospirosis	..	..	1	..	1(1)	..	..	..	2
Malaria	..	1(1)	..	..	..	..	1	..	2
Meningococcal Infection	..	1(1)	..	1(1)	..	..	1	..	3
Ophthalmia	..	..	..	..	..	..	..	2	2
Ornithosis	..	..	..	..	..	..	..	..	..
Paratyphoid	..	..	..	..	..	..	..	..	..
Plague	..	..	..	..	..	..	..	..	..
Poliomyelitis	..	..	2(2)	..	..	..	..	..	2
Puerperal Fever	..	..	1	..	..	..	..	..	1
Rubella	..	26(15)	..	1	1(1)	..	2	..	30
Salmonella Infection	..	..	..	1(1)	..	..	..	..	1
Scarlet Fever	17(7)	30(19)	8(4)	1	2(2)	..	..	..	58
Smallpox	..	..	..	..	..	..	..	..	..
Tetanus	..	..	..	..	..	..	..	..	..
Trachoma	..	..	..	..	..	..	8	..	8
Trichinosis	..	..	..	..	..	..	..	..	..
Tuberculosis	33(26)	24(20)	19(9)	6(4)	7(3)	2(1)	3	..	94
Typhoid Fever	..	..	1	..	..	..	..	..	1
Typhus (Flea-, Mite- and Tick-borne)	..	..	1	..	..	..	..	..	1
Typhus (Louse-borne)	..	..	..	..	..	..	..	..	..
Yellow Fever	..	..	..	..	..	..	..	..	..

[1] Figures in parentheses are those for the metropolitan area.

The Congress languages will be English, French and German, and simultaneous interpretation will be available. The proceedings of the congress will be published. Papers submitted should reach the Secretariat by October 1, 1959. Further information may be obtained from the Secretariat, International Congress of Gastro-Enterology, 16 Lange Voorhout, The Hague, Netherlands.

INTERNATIONAL CONGRESS ON THE PREVENTION OF OCCUPATIONAL RISKS.

THE third International Congress on the Prevention of Occupational Risks will be held in Paris in 1961. The Congress is to be organized by the French National Safety Institute, under the patronage of the International Social Security Association, in cooperation with the International Labour Office. The theme of the Congress will be "Research and Progress in the Prevention of Occupational Risks". Up-to-date lectures will be given on the latest discoveries and on possible developments in research, technological progress, medicine and psychology, by leaders, perhaps not specifically in the world of accident prevention, but in technical and scientific fields. Those interested in "prevention" will in turn report on the research they have carried out, and on the progress achieved in the prevention of occupational risks through the application of different technical and psycho-medical measures. Some of the work of the Congress will be carried out in plenary sessions and some in specialized sections. Participants will be given the opportunity of meeting individually and in small groups to discuss problems of particular interest. Further information may be obtained by writing to the International Social Security Association, Committee for the Prevention of Occupational Risks, 154, rue de Lausanne, Genève, Suisse.

The World Medical Association.

LIBRARY FACILITIES FOR FOREIGN DOCTORS.

THE Council of the British Medical Association in London has announced that the library facilities of the British Medical Association are available to members of Member Associations that hold membership in The World Medical Association. Foreign doctors who are resident in Great Britain for a period of not more than six months are invited to use the library facilities of the British Medical Association. They will be afforded all privileges of these facilities wth the exception of borrowing the books. The Council was of the opinion that doctors visiting a foreign country would appreciate being offered the use of the National Medical Association library facilities. This is an additional project in the programme of the British Medcal Association in fulfilling the objective of The World Medical Association in promoting contacts between the medical profession in different countries.

Nominations and Elections.

THE following have applied for election as members of the Victorian Branch of the British Medical Association:

Gunn, Neil Arthur, M.B., B.S., 1949 (Univ. Melbourne), D.D.M. (Sydney), 21 Grant Street, Newtown, Geelong.

Dade, John de Berri Johnston, L.M.S.S.A., M.B., B.S. (1956), R.C.O.G., 49 Nunn Street, Benalla, Victoria.

THE undermentioned has applied for election as a member of the South Australian Branch of the British Medical Association:

Tatham, Peter Heathcott, B.A., M.B., B.Ch. (Univ. Cantab.), Royal Adelaide Hospital, North Terrace, Adelaide.

Deaths.

THE following deaths have been announced:

SHEAHAN.—James Gerald Sheahan, on August 30, 1959, at Yea, Victoria.

LINK.—Harold Selby Link, on September 1, 1959, at Brighton, Victoria.

HESELTON.—Thomas William Heselton, on September 5, 1959, at Strathfield.

Diary for the Month.

SEPTEMBER 22.—New South Wales Branch, B.M.A.: Hospitals Committee.
SEPTEMBER 23.—Victorian Branch, B.M.A.: Branch Council.
SEPTEMBER 24.—New South Wales Branch, B.M.A.: Branch Meeting.
SEPTEMBER 24.—South Australian Branch, B.M.A.: Scientific Meeting.
SEPTEMBER 25.—Queensland Branch, B.M.A.: Council Meeting.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Medical Secretary, 135 Macquarie Street, Sydney): All contract practice appointments in New South Wales.

South Australian Branch (Honorary Secretary, 80 Brougham Place, North Adelaide): All contract practice appointments in South Australia.

Editorial Notices.

ALL articles submitted for publication in this Journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations, other than those normally used by the Journal, and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference to an article in a journal the following information should be given: surname of author, initials of author, year, full title of article, name of journal, volume, number of first page of article. In a reference to a book the following information should be given: surname of author, initials of author, year of publication, full title of book, publisher, place of publication, page number (where relevant). The abbreviations used for the titles of journals are those of the list known as "World Medical Periodicals" (published by the World Medical Association). If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors submitting illustrations are asked, if possible, to provide the originals (not photographic copies) of line drawings, graphs and diagrams, and prints from the original negatives of photomicrographs. Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary is stated.

All communications should be addressed to the Editor, THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales. (Telephones: MW 2651-2-3.)

Members and subscribers are requested to notify the Manager, THE MEDICAL JOURNAL OF AUSTRALIA, Seamer Street, Glebe, New South Wales, without delay, of any irregularity in the delivery of this Journal. The management cannot accept any responsibility or recognize any claim arising out of non-receipt of journals unless such notification is received within one month.

SUBSCRIPTION RATES.—Medical students and others not receiving THE MEDICAL JOURNAL OF AUSTRALIA in virtue of membership of the Branches of the British Medical Association in Australia can become subscribers to the Journal by applying to the Manager or through the usual agents and booksellers. Subscriptions can commence at the beginning of any quarter and are renewable on December 31. The rate is £6 *per annum* within Australia and the British Commonwealth of Nations, and £7 10s. *per annum* within America and foreign countries, payable in advance.